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DIAGNOSIS OF LESIONS NEAR THE CARDIA

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Lesions of the esophagus and stomach near the cardia frequently cause diagnostic difficulty because of their clinical and roentgenographic similarity. The patient who has a lesion near the cardia usually has one or more of the following symptoms: dysphagia, substernal distress, regurgitation, heartburn, hemorrhage, weakness or decrease in appetite and loss of weight. Sometimes abnormalities are found when related symptoms are absent or insignificant. For example, careful roentgen examination of patients with other digestive conditions often reveals unsuspected hiatus hernia. Roentgen examination of the esophagus and stomach should be considered inadequate unless the upper part of the stomach and lower end of the esophagus have been studied with the patient in the horizontal as well as the upright position. Barium suspension given while the patient is lying down may disclose lesions that have been overlooked when he was upright. Esophagoscopic and gastroscopic examinations supplement other diagnostic procedures.

CONGENITAL STENOSIS

Congenital strictures of the lower end of the esophagus are usually of two types, those in which there is considerable longitudinal involvement, as well as annular stenosis, and congenital webs, which are membranous constrictions of limited longitudinal extent. Babies with extreme stenosis of the esophagus experience dysphagia with the first feeding. If stenosis is moderate, the child may have no noticeable difficulty in swallowing until solid food is taken. When narrowing is slight, stenosis may not be suspected for years unless food lodges at the constriction. These patients often say that they have been "slow eaters" all their lives. Roentgenographic or esophagoscopic examination will confirm the diagnosis. In order to determine the longitudinal extent of a stricture, barium suspension should be given while the patient is lying down.

CARDIOSPASM

Cardiospasm, sometimes called achalasia of the cardia, is found at any age but is more common in youth or middle age. It occurs somewhat more often in men than in women and varies tremendously in degree and duration before the patient seeks medical care.

The initial symptom is usually dysphagia, which may be intermittent. The average patient with cardiospasm tells a clearcut story of difficulty in swallowing various foods, particularly cold liquids. Sometimes, when asked about dysphagia, a patient will say that he can "swallow all right, but the food will not go down" after it is swallowed. These patients resort to deep breathing and various motions to force the food down. Lower substernal distress is common. It is usually localized but sometimes extends over the precordium and may be confused with pain of cardiac origin. Both cardiospasm and heart disease may exist in the same person, thus complicating the clinical picture.

Regurgitation of food and secretion occurs when severe obstruction is present and the dilated esophagus cannot empty itself. Cough is caused by aspiration of regurgitated material, particularly at night. I have known of patients with cardiospasm who were treated for pulmonary disease for several years before the cause of their symptoms was discovered. Pulmonary symptoms due to cardiospasm disappear after treatment of the stenosis, provided bronchiectasis has not developed. Loss of weight may be extreme when dysphagia is of long duration, and dehydration may become serious. The general physical examination seldom discloses abnormalities other than the loss of weight or dehydration, which vary with the severity and duration of the disease. Laboratory studies usually show normal conditions.

Roentgen examination must include fluoroscopic and radiographic studies made with the patient in both the vertical and horizontal positions. The administration of iced barium mixture will induce spasm in mild cases. Although the roentgenographic appearance of the esophagus with cardiospasm is characteristic, it is simulated by carcinoma of the cardia and fundus.

In cardiospasm the esophagus is dilated above a smooth tapering obstruction at the level of the diaphragm. The esophagus may be increased in length as well as dilated. This causes tortuosity and angulation. When high grade obstruction is present, residual food and secretion fill the esophagus and the contrast material may be seen gravitating through fluid which rises to the top. Filling defects due to retained food particles may resemble those caused by organic disease. When the patient is standing, the barium suspension tends to reach a certain hydrostatic level in the esophagus before passing through the cardia. When the level is exceeded, barium flows into the stomach. When the hydrostatic pressure is reduced, the flow stops. Before dilating the cardia in suspected cardiospasm, one should pass an olive-tipped bougie, using a previously swallowed thread as a guide. If this passes into the stomach with little resistance at the cardia, a large olive, air bag or hydrostatic dilator may be used. Should resistance be encountered at the cardia or blood be found on the bougie, further examination must be made to rule out malignant growth or cicatricial stenosis.

Read before the Section on Gastroenterology and Proctology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

DIFFUSE SPASM

Diffuse spasm usually involves the lower part of the esophagus. Cardiospasm, diverticula or esophagitis may be associated. Dysphagia is intermittent or prolonged. Pain is sometimes severe. Like all substernal pain, it must be differentiated from pain of cardiac origin. The roentgen examination shows irregularity and spasm of the involved area. When spasm is severe, the radiographic appearance may suggest that of carcinoma, but there should be little difficulty in the fluoroscopic differentiation of the two conditions. Passage of an olive-tipped bougie over a thread guide may increase the distress. When the bougie is withdrawn, the esophagus may be felt to grasp the instrument. Extremely gentle pressure should be used. Treatment with dilating olives or bags is not often successful.

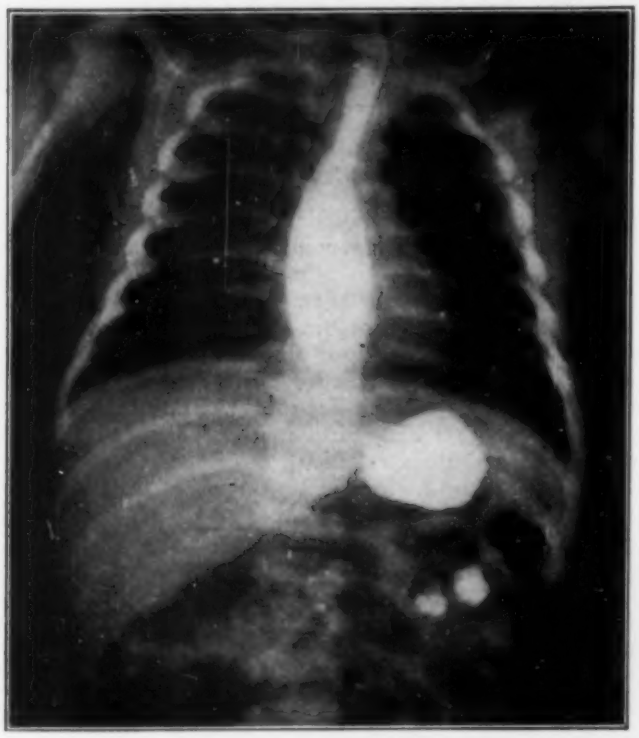

Fig. 1.—Stenosis of the esophagus in an infant due to a congenital web near the cardia. There was four hour retention of barium suspension in the esophagus.

Fig. 2.—Cardiospasm of thirty-five years' duration. The esophagus is dilated and increased in length.

CARCINOMA

Carcinoma of the cardia is sometimes confused with cardiospasm. Dysphagia is usually of shorter duration than it is in cardiospasm, and the disease is more rapidly progressive. Occult blood is generally found in the stools. If the esophagus is involved above the cardia, roentgen examination may show narrowing above the diaphragm. Esophagoscopic examination and biopsy are then indicated. When the growth is below this level and the cardia is invaded from the side, the lesion may not be visible even when the tip of the esophagoscope is passed into the stomach.

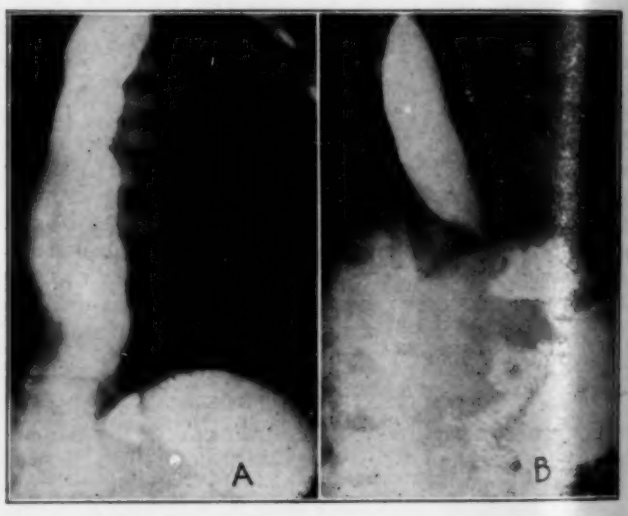

Fig. 3.—*A*, cardiospasm with concomitant diverticulum of the stomach near the cardia. *B*, carcinoma of the cardia and fundus resembling cardiospasm in roentgenographic appearance.

Gastroscopic examination may be only partially successful in growths of the stomach near the cardia. Resistance is encountered at the cardia, and the optical field is decreased by the bending of the flexible part of the instrument. In some cases traumatic bleeding may be observed, but the site of trauma is often too close to the instrument to be visible. In others there is a limited view of the growth. The utmost care must be used in passing the instrument through the cardia in these cases, for there is danger of perforation.

CARCINOMA OF THE FUNDUS

Carcinoma of the gastric fundus which does not cause dysphagia produces few early symptoms. Gradually decreasing appetite and loss of strength due to anemia and low food intake are the usual symptoms. Discomfort in the upper part of the abdomen appears as the disease advances. Loss of weight is gradual, and occult blood is found in the stools.

The gastric contents usually show the characteristic findings of carcinoma. In doubtful cases microscopic study of gastric washings may establish the diagnosis.

A filling defect of the fundus is demonstrated roentgenographically. In some cases air contrast roentgenograms taken with the patient upright will reveal a defect not visible when the fundus is filled with opaque material. Gastroscopic examination may be of value.

LEIOMYOMA

Leiomyoma of the upper part of the stomach is asymptomatic unless dysphagia or bleeding occurs. The roentgenographic appearance resembles that of carcinoma. Gastroscopic examination is indicated when the cardia is not obstructed.

HIATUS HERNIA

Partial thoracic stomach due to herniation of the upper part of the stomach through the hiatus esophageus of the diaphragm is more common than is generally realized. It will be found in direct proportion to the interest and experience of the examining physician and the scope of the examination.

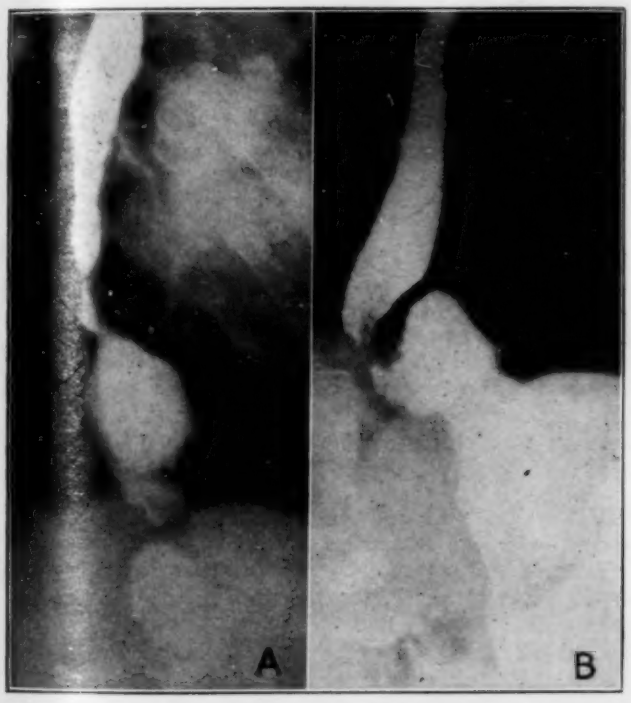

Fig. 4.—*A*, partial thoracic stomach with short esophagus. Hemorrhage occurred from an ulcer at the cardia. *B*, esophagogastric type of hiatus hernia.

Associated symptoms may be mild or severe. A carefully taken history will usually disclose a tendency to heartburn, regurgitation or substernal distress. Regurgitation occurs when the patient bends or strains or when he is lying down after a meal. The distress is frequently confused with that of gallbladder or heart disease. It is usually aggravated by eating or lying down and may be induced by lifting or straining. Exertion, such as walking, will usually not induce pain. When gallbladder or heart disease is associated, the problem becomes more complicated.

An adequate roentgen examination will ordinarily reveal the condition. Gastroscopic examination may disclose hiatus hernia that has not been demonstrated roentgenographically. The left lateral position used during gastroscopic examination favors movement of the stomach into the thorax during the negative pressure phase of inspiration. This position also aids fluoroscopic visualization of the hernia. Constriction of the lumen of the stomach by the diaphragm may be observed with the gastroscope. Gastric mucosal folds below the diaphragm converge toward the hiatus and separate in the herniated pouch above. Respiratory movements of the diaphragm are visible through the stomach wall.

Three types of hiatus hernia have been classified by Åkerlund. They are paraesophageal, esophagogastric

Fig. 5.—Gastroscopic view of hiatus hernia. The constriction is caused by the diaphragm.

and that associated with a short esophagus. Gastritis, erosions or peptic ulcer may occur in any of them.

In the paraesophageal type of hiatus hernia the cardia remains in its usual position and part of the fundus of the stomach passes into the thorax beside the esophagus. The esophagogastric type is characterized by the fact that the cardia is involved in the hernia and passes into the thorax with the herniated part of the stomach. The esophagus may be tortuous or angulated because of the position of the cardia above the diaphragm. The herniated part of the stomach may slide freely through the hiatus esophageus in both types, or part of the stomach may be incarcerated above the diaphragm. Symptoms will vary greatly in individual patients, depending on the size and mobility of the

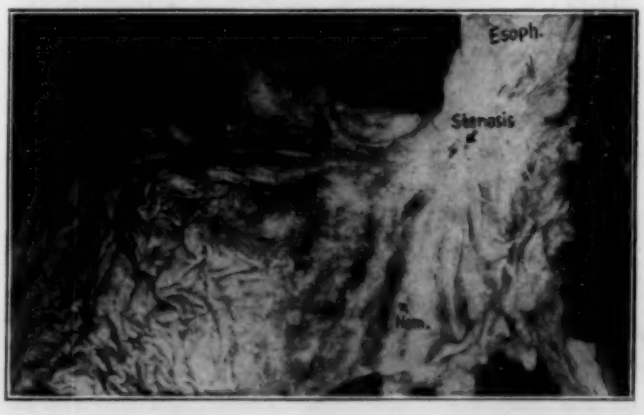

Fig. 6.—Autopsy specimen of partial thoracic stomach with short esophagus. Cicatricial stenosis at the cardia and mucosal hemorrhages at the level of the diaphragm may be seen.

herniated part of the stomach. When erosions or ulcers are present, bleeding may occur. Perforation is an occasional complication.

SHORT ESOPHAGUS

Partial thoracic stomach associated with a short esophagus is generally thought to be congenital. It has been reported in children but in practice is found

more often in older persons. If the congenital explanation is accepted, the condition is not a true hernia. Clinically it falls with the other types and should be grouped with them. Some observers believe that the esophagus shortens after the hernia develops. No doubt that is true in some cases.

Clinical detection of this condition in older people is probably due to prolonged regurgitation of gastric contents, with resulting ulceration and fibrosis at the cardia. Dysphagia, regurgitation, heartburn, substernal distress and hemorrhage are the outstanding symptoms. In patients with pain or hemorrhage, ulceration of the cardia is frequently demonstrated roentgenographically or by esophagoscopic examination.

The roentgenographic appearance is characteristic. The cardia is found at the superior part of the thoracic stomach and remains in that position. As the thoracic pouch fills and empties, the cardia can be observed, especially if the contrast material is swallowed while the patient is lying down. Carcinoma of the lower end of the esophagus may be simulated by a partly filled thoracic pouch.

In interpreting fluoroscopic and radiographic appearances, one must remember that dilatation of the lower end of the esophagus occurs with inspiration. This dilated ampulla, when filled with radiopaque material, may be mistaken for hiatus hernia.

ESOPHAGITIS

Esophagitis, erosion or peptic ulceration of the lower end of the esophagus is usually associated with regurgitation of gastric contents. Dysphagia and substernal distress are common. The roentgenographic appearance resembles that of carcinoma of the esophagus because of inflammatory swelling, spasm and fibrosis. Esophagoscopic examination will assist in the diagnosis. Biopsy shows inflammatory changes.

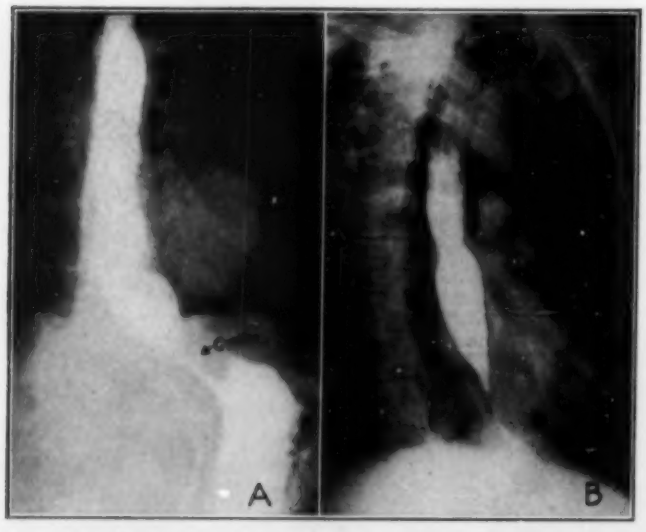

Fig. 7.—*A*, stenosis at the cardia due to peptic ulceration of the cardia and fundus of the stomach. *B*, stenosis near the cardia due to esophagitis.

PEPTIC ULCER OF THE STOMACH

Peptic ulcer of the stomach near the cardia occasionally causes dysphagia. Pain may be severe. An ulcer crater can sometimes be demonstrated by roentgen examination. Scarring of the fundus may produce a defect resembling that of carcinoma, but the prolonged history of distress and the course of the disease differ from that of carcinoma.

DIVERTICULA OF THE ESOPHAGUS

Diverticula of the lower part of the esophagus, when sufficiently large, cause dysphagia and substernal pain which is aggravated by food. Cardiospasm, diffuse spasm and esophagitis are commonly associated. Ulceration may develop within a diverticulum. Roentgenographic and esophagoscopic examination establish the diagnosis. Treatment of associated cardiospasm with dilators is of little benefit.

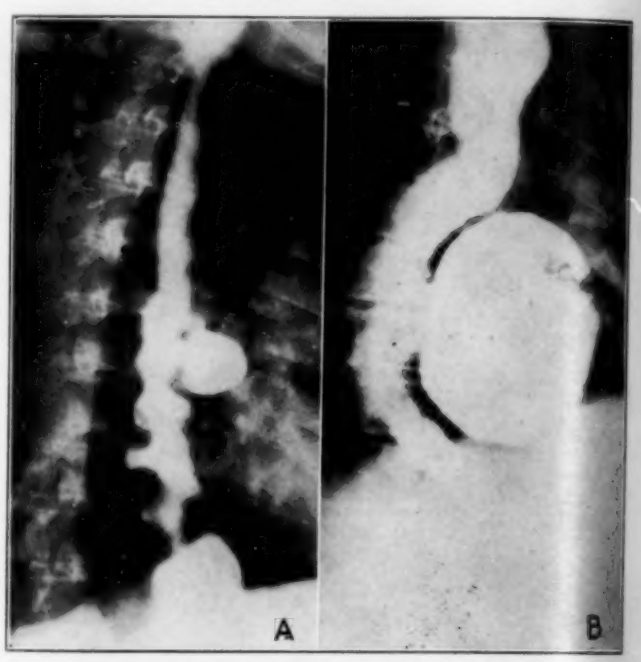

Fig. 8.—*A*, diverticulum of the esophagus with associated diffuse spasm. *B*, the same patient three years later.

DIVERTICULA OF THE STOMACH

True diverticula of the stomach are most common near the cardia. They do not always cause symptoms and are found at any age. They are usually discovered during a roentgen examination of the stomach and are seldom suspected clinically.

Mucosal erosion or ulceration of a diverticulum sometimes causes pain or bleeding. Cardiospasm at times accompanies a gastric diverticulum but is not necessarily caused by the diverticulum.

The stoma of a gastric diverticulum may be visible by gastroscopic examination, but the interior is rarely seen. I once inserted the tip of a gastroscope into a large diverticulum just below the cardia. Although a limited view was obtained, erosions were visible. High epigastric pain, which had been the chief complaint, was relieved by resection of the diverticulum.

VARICOSITIES

Varicosities of the esophagus and upper part of the stomach may be suspected when there is hematemesis, particularly if red blood appears in appreciable quantity. Concomitant symptoms and physical and laboratory findings of cirrhosis of the liver or splenomegaly (Banti's syndrome) strengthen the suspicion.

Careful radiographic examination with a small amount of contrast material will usually demonstrate the dilated tortuous veins. When the esophagus is distended with opaque material, the veins will not be visible. If doubt exists, esophagoscopic or gastroscopic examination will aid in the diagnosis.

CASCADE STOMACH

The cascade, or "cup and spill," stomach is usually asymptomatic and is mentioned because it may be associated with organic disease. An apparent cascade deformity of the stomach sometimes results from organic change. Deformity due to carcinoma of the posterior wall of the stomach may be confusing, but knowledge of the symptoms and clinical findings will aid in the diagnosis. Occasionally gastroscopic examination discloses ulcer or carcinoma in a cascade stomach.

FOREIGN BODIES

Foreign bodies in the lower end of the esophagus may be confused with or associated with organic disease. The history of the swallowing of a foreign body is not always clear. Sometimes the foreign body is not radiopaque or has been dislodged before examination. Esophagoscopic examination should be resorted to if the presence of a foreign body is suspected. No attempt should ever be made to force a foreign body into the stomach by passage of a tube or bougie. Traumatic perforation of the esophagus occurs easily and may have fatal results.

Recently I examined a man who had been unable to swallow food or liquids for more than sixty hours. His difficulty developed after he took serutan® for constipation. A small amount of barium sulfate, given orally, was observed fluoroscopically to be arrested by a mass within the lumen of the esophagus. After aspiration of the barium mixture, an esophagoscope

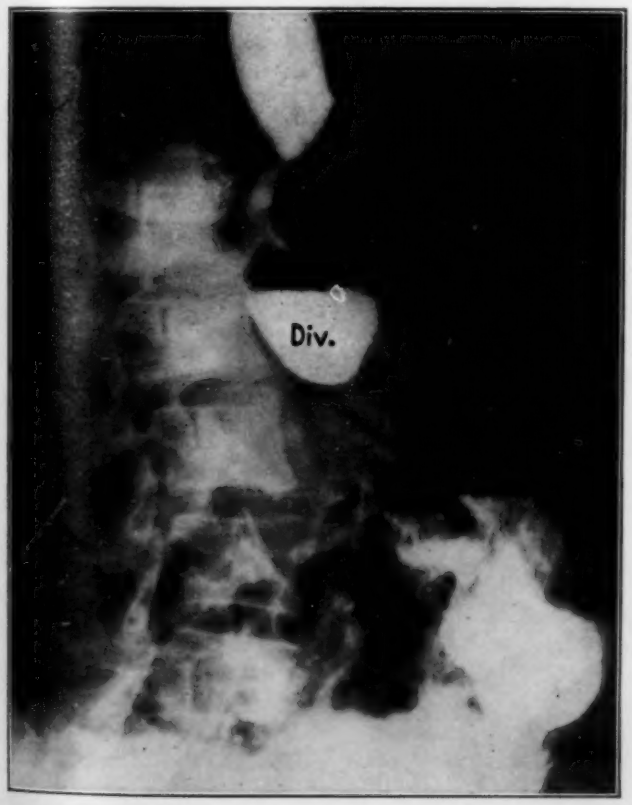

Fig. 9.—Diverticulum of the stomach just distad to the cardia. A gastroscope was inserted into the diverticulum, and erosions were seen.

was passed and the lower end of the esophagus was found to be filled with a swollen mass of serutan.® It could not pass into the stomach and acted as a "ball valve" at the cardia. After removal of the mass, esophagoscopic and roentgenographic examinations did not show abnormality of the cardia.

Impaction of food in the esophagus should arouse suspicion of organic stenosis. Roentgenographic and esophagoscopic examination are indicated.

Foreign bodies are often swallowed by persons who wear dentures. If small enough, they pass into the stomach without ill effect. Sometimes they lodge

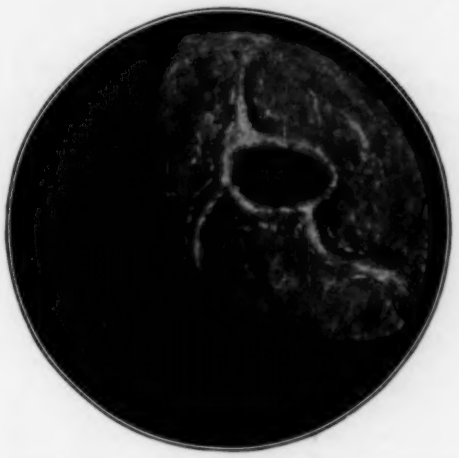

Fig. 10.—Gastroscopic appearance of the stoma of a diverticulum of the stomach near the cardia.

temporarily and produce ulceration of the esophagus by pressure or trauma. Although the foreign bodies pass on, distress may be experienced for a time. Healing sometimes causes cicatricial stenosis, which may not be detected until the patient has forgotten the incident.

A woman had been told for several years by various physicians that her substernal discomfort was due to globus hystericus. After a web-like stricture of the esophagus was found, she remembered having swallowed a small piece of wood several years before. There had been mild substernal pain for a few days which had disappeared after she felt the foreign body pass into the stomach. Later she began to experience substernal discomfort after eating. The diagnosis of globus hystericus added to her discomfort, for she resented being told that her symptoms were "typical of a neurotic person." Treatment of the stricture gave complete and permanent relief.

EVENTRATION OF THE DIAPHRAGM

Eventration of the left side of the diaphragm is found at any age and generally does not cause symptoms. The roentgenographic appearance when the stomach is filled with barium mixture sometimes resembles that of hiatus hernia. Careful fluoroscopic and radiographic examination with the patient in both upright and horizontal positions will differentiate the conditions.

SUMMARY

The more common lesions of, or near, the cardia include congenital stenosis, cardiospasm, diffuse spasm of the esophagus, carcinoma, hiatus hernia, esophagitis, peptic ulcer, diverticula, varicosities, cascade stomach, foreign bodies and eventration of the diaphragm.

Adequate recording of the patient's history, careful roentgen study with the patient in both upright and horizontal positions along with endoscopic examination, when indicated, will enable one to make an accurate diagnosis in a large majority of cases.

ABSTRACT OF DISCUSSION

DR. RUSSELL S. BOLES, Philadelphia: Dr. Fitzgibbon's paper reminds one of the indispensability of a good history and a physical examination in the diagnosis of disease. Those two diagnostic factors are being more and more discarded in favor of other means of diagnosis. Here they are demonstrated to be absolutely essential. I hope physicians will see more good, sound clinical papers of this type. This has been a learned discourse on cardiospasm, esophageal spasm and other spasms without any reference to sex; Dr. Fitzgibbon's paper shows that one may have good, healthy, normal ideas about the opposite sex without being doomed to have some disease or other. He also made no reference—which was pleasing to me—to personality and type; he did not say that if one happens to have a certain type of personality or a certain build or disposition he is susceptible to one of these diseases. Concerning the diagnosis of hiatus hernia, I suppose the most important symptomatic indication in these persons is substernal or epigastric pain, or at least discomfort, particularly when they lie down. I think any patient who ever mentions that symptom should at once be suspected of having hiatus hernia, and, as Dr. Fitzgibbon said, patients should always be carefully examined for it in the erect and especially in the horizontal position, perhaps more than once if it is not detected the first time. Another point of practical importance is that physicians sometimes unfortunately discover, after they have subjected a patient to a gallbladder operation, an operation for an ulcer or appendectomy, that they conscientiously could not say that what they had found justified the operation or caused the symptoms of which the patient complained. Where such a situation is encountered during operation, it is important that the diaphragm be carefully examined to see whether, by any chance, hiatus hernia may have been overlooked, even though horizontal roentgen examinations had been made.

DR. EDWIN BOROS, New York: Originally, with the flexible gastroscope, it was hoped that one could see lesions around the cardia. When they are seen, one cannot be sure because of the inability to perform biopsies. It is perfectly possible, with the advent of Dr. Benedict's combination gastroscope and biopsy apparatus, that lesions in this region may be diagnosed. Obstructions at the diaphragm do not, however, permit the passage of a gastroscope, and one must resort to esophagoscopic examination. For anatomic reasons, such is not always possible, since the plane of the stomach lies at an angle of 45 degrees to that of the esophagus; in addition to that, considerable spasm and obscuring of the lumen may take place. That is one reason why it is essential, if for nothing more than for the safety of the patient, that the physician have recourse to the flexible esophagoscope in order that better methods of diagnosis be available for these patients. I should like to ask Dr. Fitzgibbon whether he has had any experience with perforation of the esophagus.

DR. JOHN H. FITZGIBBON, Portland, Ore.: Simulation of the distress of coronary artery disease by hiatus hernia may be confusing. It is well to remember that the conditions may coexist. As has been pointed out, the distress of hiatus hernia may be induced or aggravated by the patient's lying down, particularly after a meal. Generally, exertion such as walking or climbing stairs will not induce distress because of the dependent position of the stomach. Trauma may be an important factor in hiatus hernia. In 1 patient who had been successfully operated on, recurrence of the hernia and return of symptoms developed after the patient fell down some stairs. My experience with perforation of the esophagus has usually followed attempts by someone else to dislodge foreign bodies by passage of bougies or stomach tubes. I cannot overemphasize the danger of blind passage of instruments for this purpose. Dr. Boros was interested in a sign I have observed in perforation of the esophagus. When the patient's head and neck are extended, he is told to take a deep breath. Stretching of the esophagus by this maneuver may induce pain at the site of the perforation due to localized mediastinitis.

SUBACUTE THYROIDITIS

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and
EUGENE W. RUMSEY, M.D.
Cleveland

Subacute thyroiditis can be defined as an acute or chronic self-limited inflammation of the thyroid gland, which is probably initiated by a virus infection and prolonged by a granulomatous reaction to displaced or perverted colloid.

SYNONYMS

Many names have been given to the various inflammatory lesions involving the thyroid gland. Subacute thyroiditis, for example, has also been called pseudotuberculous thyroiditis, tuberculous thyroiditis, sclerosing tuberculosis, struma granulomatosa, granulomatous thyroiditis, giant cell thyroiditis, pseudo-giant-cell thyroiditis of de Quervain, struma fibrosa-giant cell variant, acute simple, acute noninfectious and acute nonsuppurative thyroiditis. Other types of thyroiditis such as struma lymphomatosa (Hashimoto) and Riedel's struma are distinct entities unrelated to subacute thyroiditis and are not considered in this study.[1]

CLINICAL ASPECTS

The clinical course of subacute thyroiditis is variable but two rough categories can be recognized: (1) the acute fulminating type with fever, pain, exquisite tenderness and severe systemic symptoms; and (2) the chronic type, with little if any fever, slight pain, slight tenderness and insignificant systemic symptoms. Pathologically, however, and in response to therapy these two types are identical.[1] The acute type has generally been named acute nonsuppurative thyroiditis and treated conservatively; the chronic type has usually been called granulomatous or giant cell thyroiditis and treated by thyroidectomy.

Between these two extremes there are many cases which present all combinations and degrees of local and systemic reactions and which frequently are not recognized because of the confusing clinical picture and the lack of localizing signs at the time the patient is examined. Because subacute thyroiditis is essentially a self-limited disease which eventually subsides without demonstrable damage to the thyroid, because thyroidectomy is neither necessary nor desirable in its treatment and because the symptoms respond specifically to roentgen treatment it is important to recognize subacute thyroiditis and treat it effectively.

Etiologic Factors.—The etiologic basis of subacute thyroiditis is unknown. No specific causative organism has been isolated.[2] However, it has been observed after infections of the upper part of the respiratory tract,[3] measles,[4] malaria,[5] scarlet fever[6] and other diseases.[7] The reported high incidence of acute upper respira-

From the Cleveland Clinic and the Frank E. Bunts Educational Institute.

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tory infections preceding the onset of subacute thyroiditis suggests the possibility of a filtrable virus as an etiologic agent.[8] To date no virus studies or attempts to isolate a virus in subacute thyroiditis have been reported. The prolonged chronic inflammatory process observed in the thyroid may be the result of a foreign body reaction to colloid which escapes into tissue spaces when the cells lining the follicles are damaged by the virus infection.

Incidence.—Until recently only a few cases of subacute thyroiditis have been recorded. Giordanengo[9] in 1938 stated that only 54 cases had been reported since 1904. In the three year period 1946 through 1948, 38 patients with subacute thyroiditis were seen at the Cleveland Clinic, as compared with only 27 patients in the ten year period 1936 through 1945. It is not known whether this represents an actual increase in the frequency of the disease or is due to better recognition.

Age and Sex.—Subacute thyroiditis occurs most commonly in patients between 30 and 50 years of age. In this series of 38 cases the mean age was 42 (table 1). Only 5 of the 38 cases occurred in men.

Local Symptoms.—A sore throat, severe pain on swallowing and exquisite tenderness of the thyroid characterize the onset of thyroiditis. Pain usually radiates behind the ear on the affected side and occasionally to the occiput, face or jaw. Occasionally the radiation may be the dominant symptom. One patient with pain in the jaw of three weeks' duration had the wisdom tooth on the affected side extracted without relief. When the patient was treated for subacute thyroiditis by roentgen radiation the pain disappeared within seventy-two hours. Another patient with a persistent earache had received local treatment of the ear and chemotherapy for three weeks. When the patient was examined by us the history and observations were typical of subacute thyroiditis. A tonsillectomy was performed elsewhere on a third patient for a supposed chronic sore throat.

Fourteen patients noted a sore throat as an early symptom but were not aware that the thyroid was involved. Whether the disease started as a pharyngitis and later localized in the thyroid or whether it was a thyroiditis from the first is not clear. When questioned directly most patients remembered that they had pain on swallowing early in the course of their illness. Since many patients are not seen until a considerable time after the onset, it is extremely difficult to determine whether the pain was due to a sore throat or a sore thyroid. We believe that in most cases it is a thyroiditis from the onset (table 2).

Systemic Manifestations.—Fatigue, weakness and lassitude are prominent constitutional manifestations of subacute thyroiditis and are often so severe as to be incapacitating. Temperatures often rising to 101 F., and occasionally to 104 F., accompany the acute phase, and a low grade fever may be prolonged for weeks or even months. Although many of our patients were seen in the chronic or subsiding phase, in most instances it was possible to elicit a history of fever at the onset. Of the 23 patients seen in the more acute stage of subacute thyroiditis the average morning temperature was 99.4 F. Night sweats and chills were sometimes noted.

Eleven patients lost weight, the average loss being 10½ pounds (4.8 Kg.). Symptoms of pressure resembling globus hystericus may be experienced, but objective evidences of tracheal or esophageal compression were not observed. In 7 patients there were symptoms simulating hyperthyroidism such as nervousness, tremor, weakness, excessive perspiration, heat intolerance and palpitation. In this group, however, the average basal metabolic rate was only plus 9 per cent and ranged from minus 8 to plus 28 per cent. The patient with the last-mentioned rate was free of symptoms two weeks after roentgen therapy, and two months later the basal metabolic rate had fallen to plus 10 per cent.

Signs.—The thyroid gland is firm and usually diffusely enlarged; it is extremely tender. Although the entire gland usually is involved, the disease may appear as a localized process involving only the isthmus or part of a lobe. In the present series 7 instances of unilateral involvement were noted. Occasionally the disease may continue to spread and progressively involve the remainder of the gland. To this phenomenon the names "creeping" or "migratory" thyroiditis have been applied.[10]

TABLE 1.—*Distribution by Age of 38 Cases of Subacute Thyroiditis*

Age Group	Number of Cases
20 to 30	2
30 to 40	17
40 to 50	12
50 to 60	5
60 to 70	1
70 to 80	1

TABLE 2.—*Chief Complaints*

Chief Complaint	Number of Cases
Sore throat	9
Sore neck	6
Swelling in neck	4
Pain and swelling in neck	3
Lump in throat	3
Sore lump in neck	2
Nervousness	2
Thyroiditis	1
Pain in thyroid	1
Goiter	1
Pain in ear	1
Pain in jaw	1
Pressure in throat	1
Weakness and fatigue	1
Hot flushes	1
Menopause	1

Usually the thyroid is enlarged to only one and one-half or two times its normal size, but it is readily palpable because of its hardness. The tenderness is variable and in the acute cases may be so exquisite that it is impossible to examine the thyroid. In chronic cases tenderness may be absent, although the patient usually remembers that there was some tenderness at the onset.

The pulse rate is uniformly elevated in the acute form but in the chronic type may be normal. In the acute cases the average pulse rate was 103, in the chronic 84.

8. (*a*) Schilling, J. A.: Struma Lymphomatosa, Struma Fibrosa and Thyroiditis, Surg., Gynec. & Obst. **81**: 533-550 (Nov.) 1945. (*b*) Crile.[1]
9. Giordanengo, G.: Acute Non-Suppurative Thyroiditis, abstracted, Lancet **1**: 1144 (May 14) 1938.
10. King, B. T.: Thyroiditis, West. J. Surg. **41**: 391-398 (July) 1933. Crile.[1]

Diagnosis.—The diagnosis of subacute thyroiditis is predicated on one's finding a firm and tender thyroid gland. When the entire gland or one entire lobe is uniformly involved the diagnosis usually is clear. In the chronic phase, however, and especially when the thyroid is asymmetrically involved, it is difficult to establish the diagnosis until careful questioning reveals a history of sore throat, persistent pain in the ear or jaw, or pain and tenderness over the thyroid at the onset of the disease. The presence of systemic symptoms further confirms the diagnosis. Despite the fact that the affected lobe of the thyroid has a characteristic firmness and retains its normal shape, the diagnosis is frequently missed. In table 3 are listed the mistaken diagnoses made by the first examiner. There were 15 errors in 38 cases.

TABLE 3.—*Errors in Diagnosis on First Examination*

Errors in Diagnosis	Number of Cases
Nodular goiter	6
Carcinoma of the thyroid	3
Nodular goiter with hyperthyroidism	1
Neuralgia of the jaw	1
Graves' disease	1
Myositis of the neck	1
Nonspecific thyroid tenderness	1
Pharyngitis	1

Sedimentation Rate.—The sedimentation rate is consistently and greatly elevated in subacute thyroiditis.[1] A rise in sedimentation rate was found in 15 consecutive patients, with all but 3 showing extremely high elevations. The sedimentation rates in these cases are among the highest recorded and are comparable in height and consistency to those observed in acute salpingitis.

Radioactive Iodine.—In subacute thyroiditis the thyroid gland takes up little or no radioactive iodine. Tracer studies show low uptakes, usually in the neighborhood of 5 per cent and averaging 9.5 per cent compared to 30 to 50 per cent take-up by normal thyroids and a 60 to 90 per cent take-up in hyperthyroidism. In 5 of 8 consecutive cases the take-up was less than 5 per cent, in 1 case 18 per cent, in 1, 20 per cent and in 1 patient with unilateral involvement 30 per cent. This low uptake could be explained either by (1) damage to the thyroid epithelium by the virus infection or (2) absorption of the preformed colloid which had escaped into the tissue spaces. The latter hypothesis would best explain the systemic symptoms simulating hyperthyroidism as well as the fact that the uptake of I^{131} is low even when only one lobe is involved. The rapid absorption of performed colloid could produce a clinical picture similar to that caused by ingestion of desiccated thyroid.

Fig. 1.—Cut surface abnormally white and avascular; turnip-like consistency.

Fig. 2.—Note focal accumulation of polymorphonuclear leukocytes forming microabscess. Large follicle containing aggregation of histiocytes is also visible. Few acini remain (× 70).

Other laboratory tests are of little value. The white blood cell count is not elevated. The basal metabolic rate is not materially affected, but occasionally it will be as high as plus 28 per cent. In three fourths of the cases the basal metabolic rates were in the normal range of minus 10 to plus 10 per cent.

PATHOLOGY

Gross Appearance.—The inflammatory reaction usually involves the entire thyroid but may effect only a portion of a lobe, simulating a solitary adenoma. The occurrence of subacute thyroiditis in an adenomatous or previously abnormal gland is unusual. Only 3 of the 38 patients in this series had noted the presence of a goiter previous to the onset of thyroiditis.

There is moderate enlargement of the thyroid up to two or at most three times its normal size. The capsule is thin and has a pale, glistening appearance. On cut section the involved area is seen to be abnormally white, avascular, hard but pliable and of a turnip-like consistency (fig. 1). In the past pathologists have often classified these specimens as Riedel's struma, disregarding the fact that in subacute thyroiditis the inflammatory process is limited to the thyroid whereas in Riedel's struma there is extensive involvement of all the surrounding structures.

Microscopically the picture is primarily that of a foreign body reaction, fibrosis,[11] degeneration and exudation. The connective tissue elements are increased, with collagenous trabeculations between the thyroid plates and proliferation of interfollicular

11. Hazard, J. B.: Personal communication to the authors. Schilling.[3a]

stroma. The acini are decreased in size and number; the epithelial cells are mostly cuboidal and show various stages of disintegration. The degenerating follicles contain cellular debris, small amounts of colloid, collections of histiocytes (fig. 2) and an occasional giant cell.

Scattered foreign body giant cells phagocytize small rounded masses of colloid (fig. 3), and there are numerous focal areas of granulomatous reaction consisting of histiocytes and foreign body giant cells. This tubercle-like arrangement of the histiocytic elements (fig. 4) has been responsible for the terms pseudotuberculous, granulomatous thyroiditis and giant cell thyroiditis. Colloid particles or accumulations of polymorphonuclear leukocytes may be found at times in the central portion of the tubercle. Caseous necrosis is not seen.

In the cellular exudate polymorphonuclear leukocytes are prevalent and are interspersed with lymphocytes, plasma cells and histiocytes. Microabscesses are noted occasionally (fig. 2).

Needle Biopsy.—The diagnosis in questionable or obscure cases may be greatly facilitated by biopsy. Employment of the Vim®-Silverman liver-biopsy needle[12] has obviated the need for surgical exposure of the thyroid. This instrument has reduced the operation to a simple office procedure taking only a few minutes and leaving no scar. A small core of tissue 1 to 2 mm. in diameter and up to 2 cm. in length is obtained (fig. 5). It has proved valuable in confirming the diagnosis in such thyroid diseases as

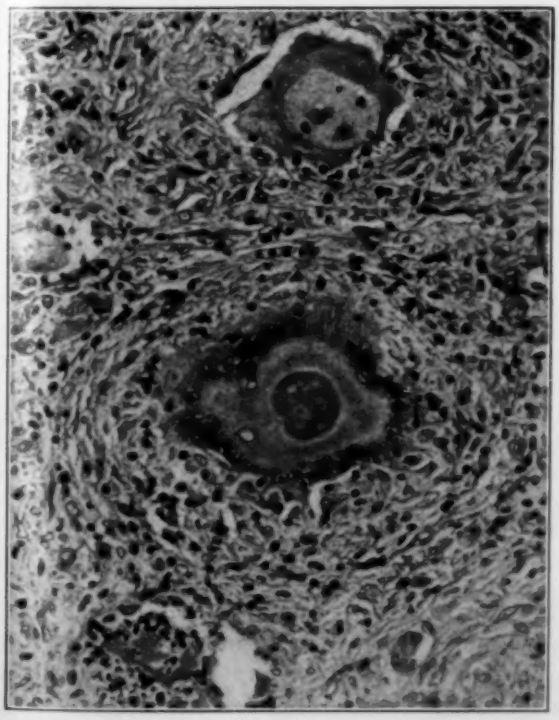

Fig. 3.—Large giant cell in the central portion contains small rounded mass of colloid (× 200).

subacute thyroiditis and struma lymphomatosa, and its use in over fifty biopsies of the thyroid has been attended by no complications. In 7 cases the clinical diagnosis has been confirmed by this method, and in all 7 the response to roentgen therapy has been prompt and complete.

12. Manufactured by the MacGregor Instrument Company, Needham, Mass.

TREATMENT

Until recently the classic treatment of the acute type of subacute thyroiditis has consisted of bed rest, sedatives and ice packs to the thyroid until the acute symptoms subsided. Iodine, sulfonamide compounds and antibiotics have proved no more effective than the

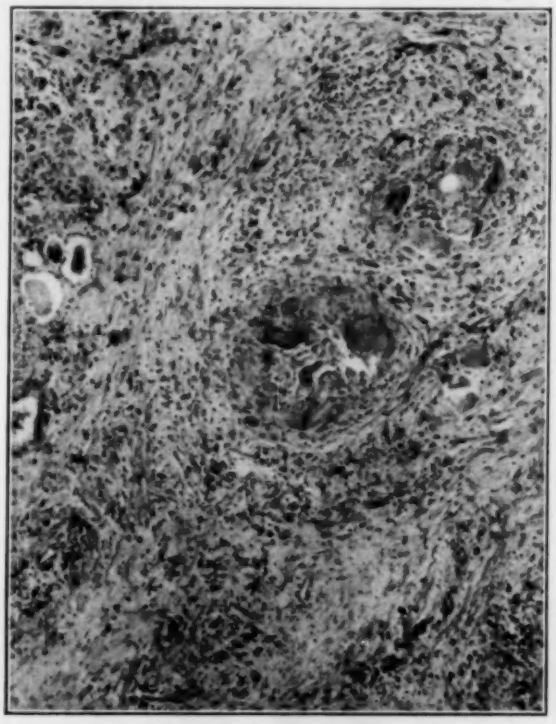

Fig. 4.—Two pseudotubercles contain giant cells with considerable surrounding fibroplasia (× 70).

conventional treatment. King and Rosellini[13] have reported favorably on the use of thiouracil. Only in severe or persistent cases was thyroidectomy recommended. For those patients seen in the chronic phase (the so-called pseudotuberculous, granulomatous or giant cell thyroiditis in which the leading sign was a firm but only slightly tender enlargement of the thyroid) thyroidectomy usually was advised.

Roentgen Treatment.—For the past ten years roentgen therapy has been the standard treatment of subacute thyroiditis at the Cleveland Clinic, and its results have been consistently good.[1] The only other references to roentgen therapy that we have been able to find were those of Young,[14] who mentioned its use in 2 cases but did not describe the results, and Schilling,[8a] who said that the effect might be sufficient to warrant its use although he did not report any cases in which it had been tried. Marshall[15] recently advised against the use of roentgen rays for fear that fibrosis would be induced by the irradiation and might result in constriction of the trachea and destruction of normal thyroid tissue. However, it seems unlikely that roentgen therapy in doses of 800 r would cause such serious changes or that it would cause more disturbances of thyroid anatomy and function than thyroidectomy, which has been advocated in the past.

Thirty-five patients were treated with total dosages ranging from 250 to 2,000 r, averaging 800 r, given in

13. King, B. T., and Rosellini, L. J.: Treatment of Acute Thyroiditis with Thiouracil (Thiourea Derivative): Preliminary Report, J. A. M. A. **129**: 267-268 (Sept. 22) 1945.
14. Young, T. O.: Inflammatory Disease of Thyroid Gland, Minnesota Med. **23**: 105-111 (Feb.) 1940.
15. Marshall, S.; Meissner, W. A., and Smith, D. C.: Chronic Thyroiditis, New England J. Med. **238**: 758-766 (May 27) 1948.

daily doses of 100 to 150 r. Only 2 patients received more than 1,000 r as an initial course. Response to treatment was uniformly good and usually dramatic. Many patients were completely relieved of pain after the first or second treatment, but in others the pain subsided more gradually. Fourteen patients obtained complete relief within a week, and 9 showed a striking diminution in the size of the gland in the same time. Four considered themselves entirely well after the fifth treatment. One patient gave a history of persistent pain in the neck for a year, yet within two weeks after initiation of treatment the symptoms had disappeared.

As nearly as could be estimated by progress examinations the pain and tenderness of the thyroid and the systemic symptoms associated with the thyroiditis had disappeared on the average by the thirteenth day, and at this time the thyroid was smaller and softer. By the end of a month the thyroid was no longer palpable, even in chronic cases in which the thyroid had been enlarged for many months before treatment.

In 6 cases after a short remission induced by roentgen therapy the symptoms and signs of thyroiditis recurred in a milder form. The average interval between attacks was six weeks. A second, less intensive, course of roentgen therapy was given to 5 patients, all of whom responded rapidly after an average of four treatments of 150 r. Two considered themselves cured after five days. Two others were perfectly well when seen one and three months later. Residual tenderness remained in 1 hypersensitive patient despite two courses of roentgen radiation totalling 1,750 r. Only the left lobe appeared to be involved, and a left lobectomy was performed. The diagnosis was subacute (pseudotuberculous) thyroiditis with numerous microabscesses. After operation pain developed in the other lobe and 300 mg. of propyl thiouracil [18] was given daily for one week without relief. The pain was relieved by procaine block of the contralateral stellate ganglion and did not recur. This case represents the only definite failure of roentgen therapy in the entire series; however, surgical measures and propyl thiouracil therapy also failed to give relief, and the causalgic nature of the pain was established by permanent relief following a procaine block.

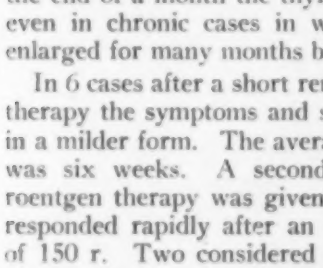

Fig. 5.—Size of stained and mounted tissue specimen of the thyroid obtained with Vim®-Silverman biopsy needle and diagnosed as subacute thyroiditis.

Undesirable after-effects were seen in only 2 patients. One of these received 2,000 r and a mild and transitory hypothyroidism developed, from which a prompt and complete recovery was made. The other was the patient previously mentioned, in whom a mild hypothyroidism developed after a total of 1,750 r had been received, plus 0.5 millicurie of radioactive iodine, a left lobectomy and a short course of propyl thiouracil. It would be difficult to attribute this patient's hypothyroidism exclusively to roentgen treatment.

Although it appears that irradiation in excess of 1,500 r may cause some impairment of thyroid function, there has been no evidence of hypothyroidism in any patient treated with the usual dosages of 600 to 800 r.

Radioactive iodine does not have therapeutic value in this disease. Nevertheless, 1 patient giving a six week history of a painful swelling in the neck, radiation of pain to the ears and severe fatigue became free of symptoms within six hours after receiving a tracer dose of 0.5 millicurie of radioactive iodine in spite of the fact that the thyroid picked up only a minimal amount of I^{131}. When seen three weeks later she was still asymptomatic and no thyroid enlargement was palpable. This result could not be duplicated in other cases.

Thyroidectomy was performed on 2 patients in whom the disease was not recognized clinically. Extirpation of the gland, although effective, seems hardly justified when less radical and equally effective roentgen therapy is available. We believe that treatment by roentgen ray is destined to replace surgical management of subacute thyroiditis.

REPORT OF CASE

Subacute (Pseudotuberculous or Giant Cell) Thyroiditis.—A woman aged 55 for five weeks had experienced pain in the lower right side of the neck radiating to the right ear. There was fatigue, palpitation and anorexia, and she had lost 6 pounds (2.7 Kg.).

Examination disclosed an enlargement of both lobes of the thyroid to twice normal size. These were hard and moderately tender. The temperature was 98.6 F. and the pulse rate 84. There were no symptoms of hyperthyroidism. The sedimentation rate was elevated to 1.85 (normal 0.45 or less). A tracer dose of radioactive iodine produced an uptake in the thyroid of only 10 per cent as compared with the normal average of 25 to 50 per cent.

A biopsy specimen was taken from the right lobe using the Vim®-Silverman needle, and the pathologist reported chronic thyroiditis with a decided granulomatous reaction to colloid.

Roentgen therapy consisting of a total of 750 r was given to the thyroid area in five treatments over a period of eight days. At the end of this time symptoms were strikingly relieved, and one week later the patient felt entirely well. The left lobe was no longer palpable, and the right lobe was smaller and less firm. Three weeks after treatment the thyroid was barely palpable and the patient remained free of symptoms.

SUMMARY

1. Subacute thyroiditis is a relatively common clinicopathologic entity distinct from struma lymphomatosa and Riedel's struma. Although it produces characteristic local and systemic symptoms, the diagnosis is often missed by those not familiar with the disease.

2. The disease may manifest itself in an acute form with fever, malaise and severe local pain and tenderness or may exist in a chronic form in which the local and systemic symptoms are minimal and the diagnosis is not clear.

3. The acute form may be confused with pharyngitis, otitis, dental infection, influenza or fever of unknown origin. The chronic form may simulate globus hystericus, adenoma of the thyroid, carcinoma of the thyroid, hyperthyroidism or chronic nervous exhaustion.

4. The diagnosis depends on the observation of a firm, usually symmetric enlargement of the thyroid which is frequently tender and is associated with a high sedimentation rate and low uptake of radioactive iodine. In doubtful cases satisfactory biopsy specimens of the thyroid can be obtained in the office by use of the Vim®-Silverman liver-biopsy needle.

5. The response of 38 patients treated by roentgen therapy in average doses of 600 to 800 r was dramatically prompt and complete. Thyroidectomy is not necessary.

AUREOMYCIN IN THE TREATMENT OF INFLUENZAL MENINGITIS

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The new antibiotic aureomycin has been found to possess a favorable chemotherapeutic effect against Hemophilus influenzae. Recently its protective ability against experimental infection by this organism has been demonstrated.[1] In vitro studies have shown aureomycin to be inhibitory in concentrations varying from 0.9 to 5.0 micrograms per cubic centimeter of medium.[2]

Aureomycin is a yellow, crystalline antibiotic substance obtained from Streptomyces aureofaciens. Its therapeutic effectiveness in diseases caused by numerous gram-negative organisms and by the rickettsiae and in certain viral-like infections is now a matter of record. It is soluble in both acid and alkaline solutions. Aureomycin, prepared as the hydrochloride, has a p_H of 2.5; whereas the p_H of the sodium salt in carbonate buffer is 8.5. The drug is well tolerated both orally and intravenously. Acute toxicity is not seen in mice when 1,500 mg. per kilogram of body weight are administered orally, and the same animal can tolerate 134 mg. per kilogram intravenously.[3] Untoward reactions in man are apparently limited to nausea, with occasional vomiting and diarrhea. Effective blood levels are reached rapidly, and urinary excretion of the drug is demonstrated one hour after oral administration. Aureomycin apparently gains access to the cerebrospinal fluid,[3] although Bryer and associates[4] were unable to substantiate this finding. Untoward reactions of the idiosyncratic type have not been described. With the knowledge of the favorable in vitro and in vivo effectiveness of this drug against H. influenzae, we made a clinical trial of aureomycin in meningitis caused by this organism.

METHODS

Selection of Cases.—The 3 patients whose cases are herein reported all presented signs of acute meningitis. The history obtained indicated that the disease at the time of admission was of short duration. Two of the 3 cases were classified as severe, and in 1 patient the prognosis was grave. All these patients were under 24 months of age, and 2 were less than 7 months of age. Concomitant disease of an extrameningeal nature was not demonstrated in any of these cases. A tentative diagnosis, based on examination of the spinal fluid, had been made just prior to admission.

Laboratory Procedures.—The spinal fluid of each patient was examined soon after admission. A white blood cell count was performed immediately, and, after centrifugation, the sediment was both cultured and examined by direct smear, at which time the number of organisms present was estimated. Gram's stain was used. The culture medium used was Fildes agar, and subsequent subcultures were made in mediums which were deficient in factors X and V. The amount of sugar in the cerebrospinal fluid was determined frequently, and this concentration was used as a guide to the clinical severity and progress of the disease process. In most instances the spinal fluid was examined daily during the acute phase of the illness.

Blood and pharyngeal cultures were performed in each case. Urinalysis, hemoglobin tests and red and white blood cell counts were done in the usual manner.

Clinical Observations.—The response to specific treatment was evaluated by detailed bedside observations, principally of the mental status, the conditions after neurologic examination and the febrile response to treatment.

Dosage.—Aureomycin was administered orally in the first case. An initial dose of 750 mg. was followed by 250 mg. every four hours. However, the patient's state of consciousness made the intravenous route more desirable, and the dosage was changed to 100 mg. followed by 50 mg. every six hours. An intravenous preparation was then used initially in the next 2 cases. An initial dose of 100 mg. was followed by 50 mg. every four or six hours. The oral route was resumed after forty-eight to seventy-two hours, at which time oral feedings were again feasible. The total dosage per patient averaged 12.9 Gm., given over an average period of 11.8 days. Aureomycin was readily demonstrated in the serum in case 2 on three occasions. Methods previously described[4] were used in all the serum concentration determinations. Aureomycin was not demonstrated in the spinal fluid.

RESULTS

Laboratory.—In all patients numerous gram-negative, pleomorphic organisms were found by initial direct smear. The cultures of the spinal fluid were uniformly positive after six to twelve hours' incubation, producing luxuriant colonies of H. influenzae identified as type B. The blood of 2 of these patients contained this same organism. Spinal fluid cultures became negative in the 3 cases here reported in sixty-eight, forty-eight and forty-eight hours, respectively. Smears of these spinal fluids were uniformly negative after sixty hours of treatment.

The initial spinal fluid sugar in the 3 patients was 29.0, 17.0 and 5.6 mg. per hundred cubic centimeters, respectively (mean, 17.2). The mean time for this electrolyte to reach normal levels was 18.6 hours.

Clinical.—Irrespective of the degree of the preceding fever or the age of the patient, aureomycin therapy was followed in all cases by fall of temperature to normal levels within ninety-six hours after the initial dose. Improvement in the patients' sensorium was uniformly observable, but not striking, in the first thirty-six hours of treatment. However, on the third day of

Miss Ann Merideth and Miss Audrey Funk gave technical assistance.
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From the Departments of Medicine and Pediatrics, University of Maryland School of Medicine. Resident in Pediatrics (Dr. Drake), Professor of Pediatrics (Dr. Bradley), Assistant Resident in Pediatrics (Dr. Imburg), Intern in Medicine (Dr. McCrumb) and Associate Professor of Medicine (Dr. Woodward).

1. McCrumb, F. R., Jr.; Woodward, T. E., and Merideth, A. M.: Aureomycin in the Treatment of Experimental H. Influenzae Infection, to be published.

2. Chandler, C. A., and Bliss, E. A.: In Vitro Studies with Aureomycin, Ann. New York Acad. Sc. **51**: 221, 1948. McCrumb, Woodward and Merideth.[1]

3. Harned, B. K.; Cunningham, R. W.; Clark, M. C.; Cosgrove, R.; Hine, C.; McCauley, W. J.; Stokely, E.; Vessey, R. E.; Yudola, N. N., and Subba Row, Y.: The Pharmacology of Duomycin, Ann. New York Acad. Sc. **51**: 182, 1948.

4. Bryer, M.; Schoenbach, E.; Chandler, C.; Bliss, E., and Long, P.: Aureomycin: Experimental and Clinical Investigations, J. A. M. A. **138**: 117 (Sept. 11) 1948.

treatment abatement of such symptoms as mental dulness and convulsions was definite. On the fifth day the acute phase of illness in all patients had completely disappeared. The patients were plainly convalescent, with increased strength and return of appetite, which made oral administration of food and drug feasible.

REPORT OF CASES

Case 1 (Fig. 1).—The patient was a Negro boy, aged 2, who became drowsy and refused to eat twelve hours prior to admission. He was seen five hours later, at which time he had an inflamed pharynx and a temperature of 103 F. After examination 200,000 units of crystalline penicillin were administered.

In several hours, when first examined in the hospital, he was stuporous and responded only to painful stimuli. The pulse rate was 100, and temperature was 99.8 F. The left upper extremity was definitely paretic; there was pronounced nuchal rigidity, and Kernig's and Brudzinski's signs were positive. There was partial left ophthalmoplegia. The pupils were equal and reactive, and ophthalmoscopic examination revealed normal fundi. Deep reflexes were absent in the left upper and lower extremities.

A lumbar puncture revealed cloudy cerebrospinal fluid, and gram-negative pleomorphic rods were seen on direct smear. The initial glucose concentration of the spinal fluid was 29.0 mg. per hundred cubic centimeters.

Oral aureomycin therapy was instituted, with an initial dose of 750 mg. followed by 250 mg. every four hours. During the day of admission stupor made the oral route infeasible, and 100 mg. of the drug was given intravenously, followed by 50 mg. every six hours. There was no obvious clinical improvement during the first twenty-four hours. The patient had three clonic seizures involving his left upper extremity and the left side of his face.

The following day he continued to exhibit clonic seizures of his left side, and his state of consciousness was unaltered. Temperature and pulse rate, however, were approaching normal. Twenty-four hours after institution of intravenous therapy his state of consciousness was definitely improved, but intermittent seizures were still present, and signs of meningeal irritation persisted. Throughout this day clinical improvement was rapid, and the temperature returned to normal. By the fourth hospital day nuchal rigidity had disappeared, and the patient was alert. Weakness persisted in his left upper extremity only.

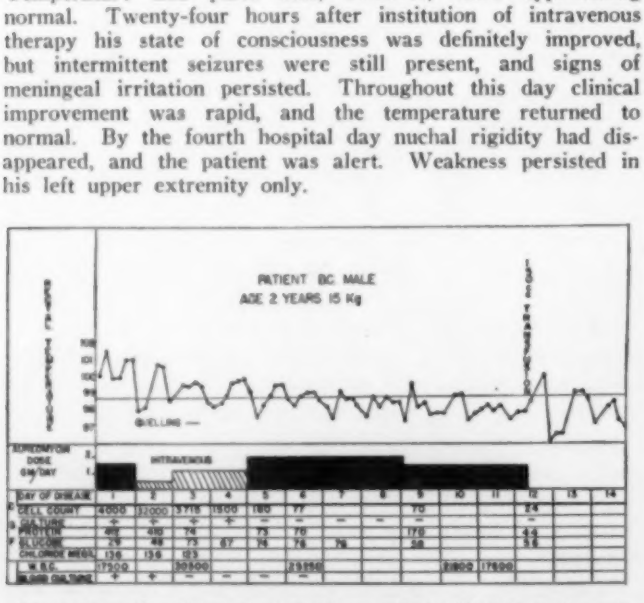

Fig. 1 (case 1).—Chart of results in a patient with influenzal meningitis treated with aureomycin.

After the initial oral therapy of 1.75 Gm. during the first twenty-four hours, the patient received 0.65 Gm. of aureomycin intravenously during the following seventy-two hour period. The oral route was resumed on the fourth hospital day and was continued until the eleventh day, at which time the patient was asymptomatic save for mild weakness of the left upper extremity. He had received a total of 11.35 Gm. of aureomycin. The patient was discharged on the twenty-first hospital day without neurologic sequelae.

Laboratory Data.—The essential laboratory data are recorded in graphic form in figure 1. Bacteria isolated from the spinal fluid produced a growth of H. influenzae for the first sixty-eight hours of therapy (forty-eight hours after intravenous therapy). Spinal fluid cell counts ranged from 4,000 to 32,000 during the active phase of the infection. Spinal fluid glucose returned to normal (48 mg. per hundred cubic centimeters) twenty hours after the institution of specific

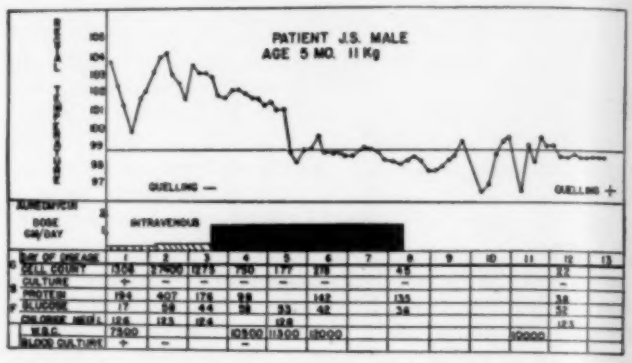

Fig. 2 (case 2).—Chart of results in a patient with influenzal meningitis treated with aureomycin.

therapy. Blood cultures on admission produced a heavy growth of H. influenzae. The organisms were also isolated from the nasopharynx. Follow-up studies, made two weeks after discharge, failed to reveal H. influenzae in the nasopharynx.

Case 2 (Fig. 2).—The patient, a Negro infant aged 5 months, was admitted with fever, drowsiness and irritability of eighteen hours' duration. The temperature was 103 F., pulse rate 150 and respiratory rate 72 per minute. Examination revealed an irritable, but alert, child weighing 11 Kg. The anterior fontanelle was tense, and nuchal rigidity was severe. Kernig's and Brudzinski's signs were both positive.

Lumbar puncture revealed cloudy fluid which contained 1,131 leukocytes. Gram-negative pleomorphic rods and diplobacilli were seen on direct smear, and subsequent culture produced H. influenzae, type B. Spinal fluid glucose was 17 mg. per hundred cubic centimeters.

Intravenous aureomycin therapy was begun with an initial dose of 50 mg., followed by 25 mg. every six hours. During the next twenty-four hours, when increasing lethargy was noted, this dosage was increased to 50 mg. every six hours. The oral route was instituted on the second hospital day, and the patient received 250 mg. every four hours until the eighth hospital day. He was treated for eight days with a total dosage of 7.9 Gm.

The patient's temperature was normal by the fifth hospital day, and nuchal rigidity had disappeared. He was alert and appeared normal. He was discharged on the fourteenth day, without residua.

Laboratory Data.—Spinal fluid cultures were sterile after forty-eight hours of specific therapy. Spinal fluid cell counts ranged from 1,311 to 27,400 during the active phase of the disease. Both blood and nasopharyngeal cultures produced H. influenzae, type B. Follow-up studies on the nasopharyngeal flora, made two weeks after discharge, failed to reveal H. influenzae.

Case 3.—The patient, a white boy aged 6 months, was admitted with fever and convulsions of ten hours' duration. Twelve hours prior to the patient's admission, when seen by the family physician, his temperature had been 104 F. A diagnosis of bacterial meningitis had been made, and he had been given single doses of sulfadiazine and parenteral penicillin.

When the patient was first observed in the hospital there was mottled cyanosis involving two thirds of his trunk, and he was in pronounced respiratory distress. The left tympanic membrane was inflamed, and bilateral horizontal nystagmus was present. Nuchal rigidity was not demonstrated, but all four extremities were spastic, and Brudzinski's sign was posi-

tive. The temperature was 104 F., pulse rate 180 and respiratory rate 50 per minute.

Lumbar puncture revealed grossly cloudy fluid, which contained 4,390 leukocytes, 5.6 mg. per hundred cubic centimeters of glucose and numerous gram-negative pleomorphic rods.

Convulsions continued throughout the first and second hospital days, and nystagmus persisted. Left external strabismus and mild right facial paresis also developed. Thrombophlebitis developed at the site of venous catheterization, which made interpretation of the temperature chart difficult.

Aureomycin was given intravenously, with an initial dose of 100 mg. followed by 50 mg. every four hours. This dosage was continued until the fourth day, at which time 50 mg. were given every six hours. The oral route was instituted on the fifth day. The patient received a total of 19.5 Gm. over a sixteen day period.

Laboratory Data.—Spinal fluid cultures were negative forty-eight hours after the institution of specific therapy, and spinal fluid glucose was normal in twenty-four hours. Spinal fluid cell counts ranged from 3,530 to 4,390 during the active phase of the disease.

The patient was afebrile after the seventh day. Neurologic examination during his fifth week of hospitalization revealed signs of diffuse cortical damage, and a pneumoencephalogram performed at this time demonstrated a communicating internal hydrocephalus.

COMMENT

Since the advent of the sulfonamide drugs, the treatment of influenzal meningitis has been modified several times. The therapeutic regimens for this disease may now be divided into three distinct groups: those utilizing the sulfonamide drugs alone, those utilizing the sulfonamide drugs and type-specific antiserum and those utilizing streptomycin, either alone or in combination with the other two.

According to the criteria outlined by Alexander and Leidy,[5] few patients should be treated with sulfonamide drugs exclusively. They reported that, of those treated with sulfonamide drugs only, over one fourth required the addition of serum after unsuccessful periods of sulfonamide treatment and only two thirds of this group recovered. European reports indicate a mortality rate of 75 per cent among patients treated with sulfonamide drugs alone. In a series of 90 patients treated with combined serum and sulfonamide drugs, only 80 per cent recovered.[5]

Alexander treated 12 patients with meningitis with streptomycin exclusively, and in 8 (66.6 per cent) recovery was prompt. Two patients recovered, with residua, when serum and sulfadiazine therapy were added. The remaining 2 who were treated with streptomycin exclusively died of the infection.

A review of the therapeutic regimens led Alexander to treat severe influenzal meningitis with a combination of all these agents. In a series of 25 patients to whom this regimen was applied, 19 recovered, 3 survived and 3 died. Streptomycin-resistant strains were found in 2 of the fatal cases. Other authors[6] have reported similar results with streptomycin therapy.

The rapid response of these 3 patients to aureomycin therapy suggests that this agent may be as effective as streptomycin or a combination of streptomycin, antiserum and sulfonamide drugs in the management of influenzal meningitis. Two of these cases may be classed as severe, if the concentration of glucose in the spinal fluid is used as a guide. One patient was comatose and close to death. The absence of toxic manifestations and the ease of administration, either by the oral or intravenous route, justify further clinical trials of this antibiotic against meningitis caused by H. influenzae.

SUMMARY AND CONCLUSIONS

Aureomycin has been shown to exert a favorable chemotherapeutic effect against Hemophilus influenzae. Former therapeutic regimens have clearly defined disadvantages. Clinical trial of this drug in the 3 cases here reported has led us to believe that it may represent a highly effective method of therapy in this type of infection. Further evaluation will afford a more accurate appraisal of its value.

ADDENDUM

Since the time of writing 4 additional patients have been treated successfully with aureomycin. The patients varied in age from 9 months to 3½ years, and in all cases signs of meningeal irritation were prominent. The disease was diagnosed in all but 1 patient within twenty-four hours of the apparent onset of illness. Temperatures were all above 103 F.

Lumbar puncture revealed grossly cloudy fluid in these 4 cases; spinal fluid leukocyte counts ranged from 1,028 to 15,000 and sugar content ranged from 4 to 30 mg. per hundred cubic centimeters. Gram-negative bacilli were seen on all direct smears, and cultures on Fildes' agar were uniformly positive for H. influenzae, type B, within twelve hours.

In 2 cases aureomycin was given intravenously initially and then orally. In the remaining 2 the oral route was used exclusively. The average total dose was 10.3 Gm. given over an average period of 13.7 days. One patient was treated successfully with 2.7 Gm. of aureomycin. Responses, both clinical and bacteriologic, were as described in the body of the paper with 1 exception, that of a Negro infant 9 months of age whose treatment was probably inadequate early in the course of the disease. The patient received 600 mg. of aureomycin per day, and cultures remained positive for seven days; response was rapid when the dosage was increased. The details of these cases will appear in a future publication.

5. Alexander, H., and Leidy, G.: The Present Status of Treatment of Influenzal Meningitis, Am. J. Med. **2**: 457, 1947.

6. Litman, S. N.; Buckley, R. P., and Wells, A. H.: Influenzal Meningitis, Minnesota Med. **30**: 647, 1947. Birmingham, J. P.; Kay, R., and Smith, M.: Streptomycin in the Treatment of Influenzal Meningitis, J. Pediat. **29**: 1, 1946. Hoyne, A. L.; Brown, R. H., and Drucker, A. P.: Influenzal Meningitis Treated with Streptomycin; Arch. Pediat. **63**: 559, 1946.

Procaine Used Intravenously.—Since procaine is believed to act peripherally, crossing the permeable, capillary membrane and bathing the terminal axone endings, its use in the treatment of traumatic injuries, burns and other conditions in which the pain stimulus is superficial seems almost specific. In the early part of the war Gordon found that procaine could be used intravenously with excellent results in the care and treatment of burns, and that solutions of 0.1 and 0.2 per cent procaine started as an infusion shortly before the change of surgical dressings and débridement provided adequate analgesia for these procedures even though no morphine or other agent was used. This analgesia lasted several hours so that the patients were able to rest comfortably. The use of procaine intravenously is not associated with the respiratory depression so frequently seen in deep sedation with morphine. Its possibilities as a valuable agent in the management of burned patients who have inhaled an irritating smoke or gas can, therefore, be readily appreciated. —Capt. Reginald J. M. Zeluff, Administration of Procaine Intravenously, *United States Armed Force Medical Journal*, January 1950.

INTERPRETATION OF HEARING TESTS

With Special Reference to Conduction Deafness

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Baltimore

The paper on the interpretation of hearing tests presented at the meeting of this section a year ago, in Chicago,[1] could well have carried the subtitle, General Considerations. Some of the important nonmedical interpretations that have been made of hearing tests were mentioned, and certain of the broad principles and physiologic facts basic to medical uses of hearing tests were stated. Among the points made were: (1) Nothing is gained clinically by making hearing tests and cannot be interpreted with reasonable certainty in terms of causative lesions. (2) No histopathologic evidence exists to support or to refute the diagnostic interpretations customarily made of the data obtained by most of the elaborate, time-consuming technics that have been devised and advocated in recent years for testing various aspects of the hearing function. (3) Often a diagnosis, so-called, is in reality only a description of the kinds of hearing defects found by

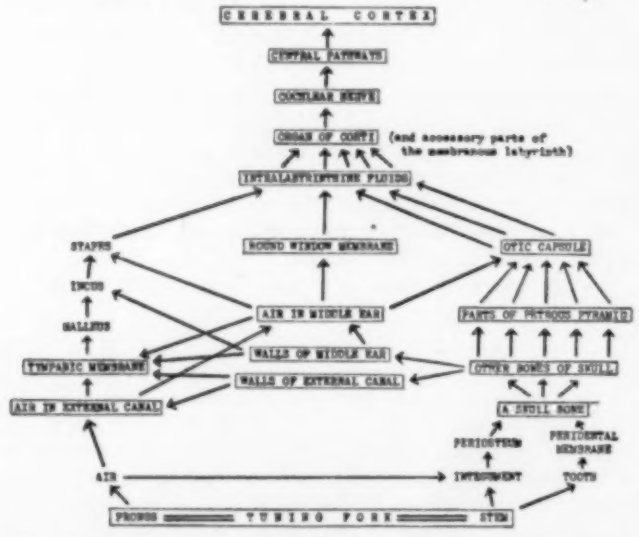

Fig. 1.—A schematic representation of the pathways by which sound waves generated by a vibrating object, such as a tuning fork, may be transmitted to the organ of Corti in the inner ear. In conduction deafness the transmission of sound along the principal air-conduction pathway, and perhaps along others, is reduced from the normal, but transmission remains good by way of at least one of the bone-conduction pathways (from Guild [2]).

the tests made. (4) The clinical history and the physical examination are of great importance in the interpretation of hearing tests, either in terms of lesions responsible for the impaired function or in terms of therapy indicated, if any. The opinion was expressed that for most patients a few simple tests of hearing afford all the information the clinical otologist needs to supplement or to confirm the impressions gained from the history and the physical examination, and the conclusion was reached that a clear distinction should be made between tests for research purposes and tests for clinical purposes. Conduction deafness, the aspect of the topic to be given special attention in this paper, affords good examples of several of the points discussed last year.

From the Otological Research Laboratory, Johns Hopkins University School of Medicine.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

1. Guild, S. R.: Interpretation of Hearing Tests, Arch. Otolaryng. 49: 431 (April) 1949.

CONDUCTION DEAFNESS

Conduction deafness is the inclusive term applied, by accepted usage, to any impairment of hearing that is due to an interference with the normal transmission of air-borne sound waves to the organ of Corti of the inner ear. The principal route along which air-borne sound is transmitted to the inner ear is shown schematically on the left hand side of figure 1, and the large number of anatomic structures that participate in its

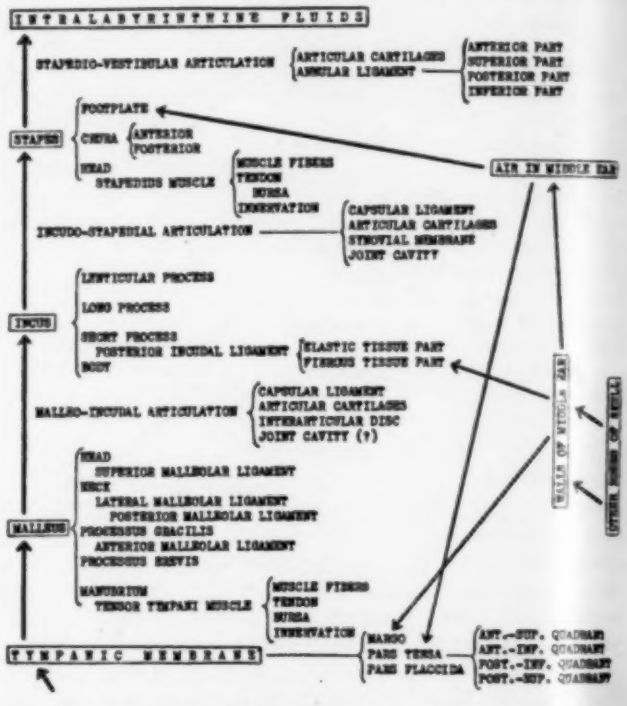

Fig. 2.—An elaboration of part of figure 1, to call attention to the large number of structures that have a role in the normal transmission of sound across the middle ear. Portions of some of the anatomically possible osseotympanic pathways for sound are also indicated (from Guild [2]).

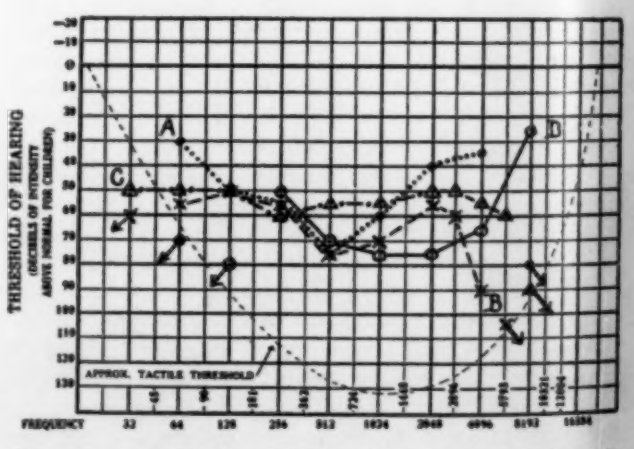

Fig. 3.—The air-conduction audiograms of four ears, *A*, *B*, *C* and *D*, that had, respectively, the conductive type lesions portrayed in figures 4, 5, 6 and 7. The symbols with arrows pointing downward and to the right signify that neither the tone of the frequency indicated nor any of the yet higher tones was perceived at the maximum intensity generated by the audiometer used. Ears *A* and *D* were tested with a Western Electric Co., Inc. 2A audiometer, which has a frequency range of from 64 to 8,192 cycles, at octave intervals; ears *B* and *C* were tested with a Western Electric Co., Inc. 1A audiometer, which generates all the frequencies shown on the chart form used in this figure. A 512 double vibration steel tuning fork was heard, by each of the four ears, normally by bone conduction and much better by bone conduction than by air conduction.

normal transmission across the middle ear are indicated in figure 2. The routes via which bone-conducted sound may reach the inner ear without traversing the middle ear are schematically portrayed along the right

hand side of figure 1. If the organ of Corti, the cochlear nerve, the central auditory pathways or the auditory cortex (fig. 1) are not normal, the conductive impairment caused by a condition that interferes with the transmission of air-borne sound to the inner ear is superimposed on the so-called nerve deafness caused by the neural lesion present. The resultant impairment is termed a combined deafness.

It is usually difficult to determine how much of a patient's impairment is due to conductive factors and how much is caused by a lesion or lesions of the neural mechanism of hearing. Often, because histopathologic evidence is lacking, the determinations are based almost entirely on hypothetic considerations. Other than the statement that hearing impairments, except in young persons, are seldom due solely to conductive lesions, no attempt will be made in this paper to discuss the respective roles of the essentially different types of lesions present in combined deafness. The presentation will instead be limited to a consideration of conditions which, if present alone, would cause a so-called pure conduction deafness.

The conditions that interfere with the normal transmission of atmospheric sound waves to the inner ear range from impacted cerumen to ankylosis of the stapedio-vestibular articulation and include all the forms of middle ear disease, such as acute, subacute and chronic suppurative otitis media, catarrhal otitis media, tuberculous otitis media, cholesteatoma and true tumors. It is unnecessary to compile a complete list of the conditions that may cause a conduction deafness. With all these conditions, tuning fork or audiometer tests typically show good hearing by bone conduction and impaired hearing by air conduction. (When the hearing by bone conduction is not good, the impaired threshold may be

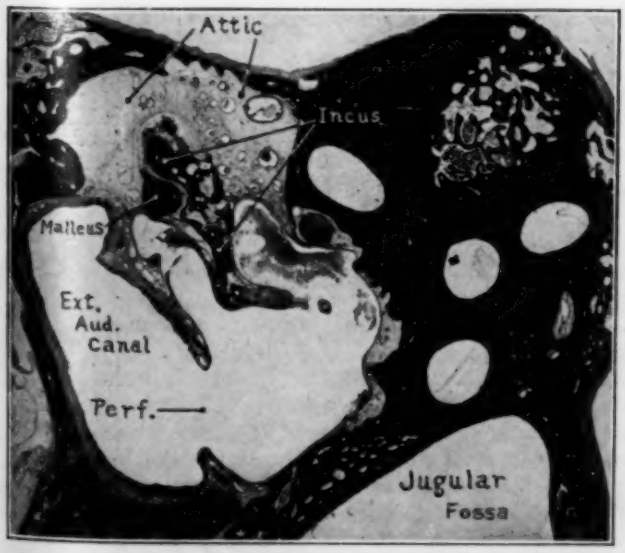

Fig. 4.—Photomicrograph, at low magnification, of a section of the ear of a 61 year old man, whose audiogram is labeled *A* in figure 3. The middle ear lesions due to the chronic suppurative otitis media, which he had had for at least forty years, obviously interfered with ossicular transmission of sound, but the shape of the audiogram cannot, as yet, be related to the particular lesions found in this ear.

due to fractures of the osseous trabeculae of the subaditus region, and is not necessarily indicative of a nerve deafness.[2]) In the advanced or severe stages of all forms of conduction deafness, the acuity of hearing is always better by bone conduction than by air conduction; the finding of this relationship, however, is not essential to a diagnosis of conduction deafness.

A far greater amount of acoustic energy is required to produce a sensation of hearing by bone conduction than is normally required for hearing by air conduction.

Fig. 5.—Photomicrograph of a section of the ear of the 43 year old man whose audiogram is labeled *B* in figure 3. The cholesteatoma-like process that resulted in the epidermization of this middle ear destroyed the tympanic membrane, separated the outer ossicles from the stapes, and so completely filled the oval window niche with scar tissue that stapedial movements due to air-borne sound waves impinging directly on the overlying epidermis were doubtless greatly hampered. The extreme impairment of hearing for the tone with a frequency of 4,096 cycles and the total loss of hearing for all the yet higher tones must have been due in part to the conductive lesions seen in this section; cochlear lesions are limited to the lower 5 or 6 mm. of the basal turn and are of only moderate degree, not sufficient by themselves to explain the loss for high tones.

A considerable degree of interference with the transmission of air-conducted sound can therefore occur before the efficiency of the air-conduction transmission system is reduced to a level equal to or below that which is normal for the best bone-conduction route. This fact explains why, in spite of the presence of a definitely conductive type of lesion, a good 512 double vibration steel tuning fork, that normally is heard twice as long from the prongs by air conduction as it is from the stem by bone conduction, may still seem louder and be heard longer by air conduction than by bone conduction. The ratio of air-conduction time to bone-conduction time is affected by all conductive lesions, but with the less severe lesions the ratio may merely be decreased rather than reversed. The possible presence of a conductive lesion is therefore not ruled out of consideration when the answer to the qualitative test is that the fork sounds louder by air conduction than by bone conduction. It is necessary also to time the duration of hearing by each route and to know what are the normal times for the particular fork as used by the examiner making the test. Suitable masking of the opposite ear must of course be used during the testing, otherwise the observations may be in error

2. Guild, S. R.: Hearing by Bone Conduction: The Pathways of Transmission of Sound, Ann. Oto., Rhin. & Laryng. **45**: 736 (Sept.) 1936.

because the test sound was actually perceived via the ear supposedly not being examined.[3]

The impairment of thresholds by air conduction, with each of the conditions that cause conduction deafness, may not only differ in amount from slight to marked but the impairment may be approximately equal for all tones, may be greater for low than for high tones or may be greater for high than for low tones. The latter variant, more impairment for high than for low tones, can occur with the simplest of all forms of unquestionably pure conduction deafness, that caused by occlusion of the external auditory canal by cerumen or by an obturator, such as an ear plug. This fact alone is sufficient reason for clinical otologists to discard the classic concept, which is still being repeated in textbooks, that a greater loss of hearing for high tones than for low tones always means a nerve deafness.

ILLUSTRATIVE CASES

The air-conduction audiograms of 4 ears are shown in figure 3. The acuity of hearing for a 512 double vibration steel tuning fork, via the affected ear of each of the 4 patients, was much better by bone conduction than by air conduction, and the bone-conduction time for each ear was normal for the fork used and for the conditions of the examination. The photomicrographs (figs. 4, 5, 6 and 7) of a histologic section

Fig. 6.—This photomicrograph, at a medium magnification, shows the essential conductive lesion, otosclerotic ankylosis of the stapedial footplate, in the ear of the 47 year old man whose audiogram is labeled *C* in figure 3. This patient was described in a previous paper.[4]

of each of the four ears show why, for the respective ears, air-conducted sound was poorly transmitted. One ear had chronic suppurative otitis media of long duration: the tympanic membrane was markedly thickened, and the ossicles were imbedded in fibrous tissue (fig. 4).

3. Methods of Testing Hearing by Bone Conduction, Committee Report, American Otological Society, Tr. Am. Otol. Soc. **26**: 85, 1936; Ann. Otol., Rhin. & Laryng. **45**: 800 (Sept.) 1936.

4. Guild, S. R.: Histologic Otosclerosis, Ann. Otol., Rhin. & Laryng. **53**: 246 (June) 1944.

One ear had an epidermized middle ear cavity: the tympanic membrane was almost entirely absent, much of the manubrium of the malleus and most of the long process of the incus had been destroyed by erosion and the stapes was surrounded by fibrocystic tissue that filled the niche of the oval window (fig. 5). The otic

Fig. 7.—This photomicrograph shows, at low magnification, the tumor-filled middle ear of a 41 year old man, whose audiogram is labeled *D* in figure 3. The meningioma had also invaded the brain but had not affected functional efficiency of the central auditory pathways. Death occurred, following an intracranial operation, only two days after the hearing tests were made; therefore there is but little chance that the middle ear conditions changed materially between the time of the otologic examination and the securing of the specimen for histologic study. Nothing has been found in this conductive lesion to explain satisfactorily why the hearing for the tone with a frequency of 8,192 cycles was much better than it was for other tones.

capsule of the third ear had an otosclerotic area that had spread across the annular ligament and caused ankylosis of the stapediovestibular articulation; the tympanic membrane and the mucosa of the middle ear were normal (fig. 6).

The fourth ear of this group is a good illustration of the fact that an otologist should always be on the alert for unusual causes of impaired hearing. The middle ear cavity had been nearly filled by an extension of a meningeal tumor through the bone of the inferior, or jugular, wall (fig. 7). The tumor had not invaded the inner ear nor the internal auditory meatus, therefore its effect on hearing was not that of a nerve deafness but was like that which would be produced by any other tissue that interfered with the movements of the ossicles of the middle ear.

The histopathologic findings in these four examples of conduction deafness of similar degree lend emphasis to the statements made in the earlier part of this paper. The practical conclusion is that otologists, in spite of any advances in methods of testing hearing, must continue to rely chiefly on the clinical history and the physical examination in order to determine why a patient is hard of hearing and what can or should be done about it.

ABSTRACT OF DISCUSSION

DR. THOMAS SAGE, Detroit: The practical use of hearing tests as a guide to therapy is important, whether or not they lead to a determination of histopathologic conditions. Fenestration will not correct nerve impairment. Those tests which differentiate between conduction and nerve loss become paramount. Bone conduction by tuning fork or calibrated electronic equipment is the most inaccurate of all methods, particularly so when one fork of low frequency is used. Dr. Guild has shown the complexities and interrelation of these pathways of sound conduction. Fowler, Davis, Stevens and others have shown the unreliability of bone conduction as a testing method. The patient does not normally listen to pure tones at threshold but to speech at 65 decibels above threshold. The group of tests that require electronic equipment other than the regular audiometer demonstrate the presence of nerve involvement by revealing the Fowler phenomenon or recruitment by several methods. The tests are conducted through and above the intensity of speech. This information is most valuable when one is considering therapy to improve conduction. No tests so far are capable of revealing the percentage of each type in mixed involvement. We are interested in instituting some type of therapy that will make the patient understand speech better. With this in mind, Davis, Walsh, Silverman and the Harvard Psycho-Acoustic Laboratory developed calibrated standards, using speech instead of pure tones. The tests measure not the ability to hear but to hear and understand. A standard was set for social adequacy, and the test bears that name. This has been one of the most practical of all tests. It is used in conjunction with the standard audiometer, and the equipment costs less than $200. The test can be completed in five to thirty minutes, and does not require a soundproof room. The last war was won because of the accuracy of electronic equipment that withstood the jar of heavy gunfire and registered frequency and time to one part in several million. These recent developments in the testing of hearing are milestones in the scientific advancement of otology. They are useful practical tools to aid the patient, and physicians should not be defeated by their assumed complexity. With one of the recent improved audiometers and the calibrated equipment of Davis and Silverman all these tests can be accurately made with instruments costing less than $1,000.

DR. JAMES B. COSTEN, St. Louis: Dr. Guild has made a strong appeal to base the diagnosis of a hearing lesion on the essential triad of clinical history, physical observations and consistent tests. It is a timely caution against a quickly made audiogram, two fork tests and a diagnosis by a nonmedical assistant making the tests. The deafened patient never stops searching for a cure and, unfortunately, is in an eager mental state to concede improvement if there is a single subjective reaction of increased comfort after treatment. It is difficult, in estimating the amount of relief from the different symptoms in the mandibular joint syndrome, to make the patient differentiate between relief from otalgia and the actual fact of hearing better. Otalgia occurs more often than any other pain reaction in this symptom complex and uniform tests of deafness the least. It is, therefore, important to continue to classify these as ear symptoms until a common pattern of deafness, if any, can be established for the mandibular joint syndrome. Dr. Guild's remarks concerning the fact that a "variant, more impairment for high than for low tones, can occur with the simplest of all forms of unquestionably pure conduction deafness, that caused by occlusion of the external auditory canal by cerumen or by an obturator" reopen a subject of extreme interest in cases of overclosure of the jaws. In 1934 I reported cases of conduction deafness, tested by forks and voice, which were improved when overclosure of the jaws was corrected. After experiment with wet specimens, sectioned along the course of the eustachian tube, impairment of tubal function and deafness was explained as due to crowding of soft tissues, compressing the membranous part of the tube against the cartilaginous, when the jaw was overclosed. When such cases later were checked with the audiometer, improvement in hearing was not consistent. High tone loss was improved in some, low tone loss in others. The gross anatomic evidence was reasonable, but controls could not be established. In some cases true nerve deafness was found and changes in occlusion were not recommended. Because improvement in upper tone levels could be shown after changes in occlusion, extravagant claims have been published by some observers as to nerve deafness being improved by this treatment. These are utterly unwarranted. The audiograms were correct enough, but the cases were certainly those of improvement in air-conduction channels, as described by Dr. Guild.

DR. ARTHUR L. JUERS, Chicago: I agree with Dr. Guild that diagnosis for routine clinical purposes still depends largely on an adequate determination of bone-conduction and air-conduction thresholds by pure tones. The loudness balance test cannot be applied when the physician is dealing with symmetric deafness in both ears. In those cases he must revert to using fork tests and audiometric bone-conduction studies to provide the differentiation. The speech discrimination test described by Davis is also not necessarily diagnostic with respect to a conduction or a nerve lesion. Davis has recently reported that in nerve deafness in which the test shows a flat curve the patient may have a good discrimination score as well as in a conduction deafness. In other words, a discrimination score reflects more the shape of the audiometric curve than it does whether or not the cause is a conduction lesion or a perception lesion. The shape of the audiometric curve for air conduction is not diagnostic with respect to a conduction or perception lesion. The differentiation depends on adequate fork bone-conduction and air-conduction audiometric studies.

DR. STACY R. GUILD, Baltimore: Dr. Sage has some good bases for his points of disagreement; I wish there were time to go into them individually. The impossibility of using expensive and elaborate electronic equipment in routine clinical work was pointed out last year. If the equipment were cheap and fool proof, that might be a different situation. In this connection, however, I stress the point that there is no histologic evidence either to support or to refute many of the diagnostic claims and interpretations made from these tests. Nearly all of them are hypothetic. I hope the impression was not created that I am opposed to elaborate testing for research purposes. My real position is that the clinical otologist, faced with the daily load of responsibility, should not be made to feel he is not doing good work unless he uses many of the newer hearing tests. The important thing is that he continue to think while handling patients.

Electrocardiography. — An action-current in the heart of animals was first demonstrated in 1856 by Kolliker and Muller by means of a rheoscopic preparation made of the muscle and nerve of a frog. The observations were confirmed by later investigators, notably Engelmann and Burdon Sanderson, who used the earliest types of galvanometers. The action-current in the human heart was first recorded with the capillary electrometer by Waller in 1887. Progress in electrocardiography, as in most fields of medical endeavor, was thereafter proportional to advances made in instrumentation. The string galvanometer was described by Einthoven in 1903. That it is widely used a half century later in the clinic and in the laboratory is a tribute to the precision, practicality and versatility of this instrument. The advent of the amplifying vacuum tube made it possible to record the relatively small currents arising in cardiac muscle by means of several types of low sensitivity oscillographs. These have at present reached their most practical form in the "direct-writing" instrument. The principle is not new but improvements in amplification and frequency characteristics have made it acceptable in a variety of clinical and investigative fields.—Charles E. Kossmann, Unipolar Electrocardiography, Including Intracardiac Leads, in the Diagnosis of Myocardial Disease, *Bulletin of the New York Academy of Medicine*. January 1950.

WHAT EVERY PHYSICIAN SHOULD KNOW ABOUT THE TEACHING OF CRUTCH WALKING

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New York

Crutches are wooden or metal objects used to support the body. Sometimes they are needed only temporarily. Often, however, they are indispensable lifelong aids to disabled persons as they perform the activities essential for daily living. Just as the sportsman must practice to acquire skill in using the tennis racquet, golf club or skis, so the disabled person must acquire skill in using his wooden or metal crutches. The ability to use crutches efficiently requires a systematic program with competent instruction. This program should include (1) the proper selection of the crutches and correct measurement, (2) a muscle test to judge the subject's joint movements and strength, (3) exercises to develop the muscle groups needed for crutch management and (4) determination of the crutch gaits best suited to meet the patient's needs.

SELECTION OF CRUTCHES AND THEIR ACCESSORIES

Underarm crutches with double uprights and hand bars are the most commonly used crutches today. Since it is not always possible to decide how long a pair of crutches should be and just where the hand bars should be placed it is best to begin with a pair of extension crutches. These crutches can be adjusted to meet the needs of the patient. If the subject is permanently disabled and will need the crutches for many years, or perhaps for life, the extension crutches should be replaced with the standard type of crutches made of oak or hickory.

Each shoulder piece should have a rubber cover over it to prevent the pressure of the hard wood in the axillary spaces. A rubber tip always covers the base of each crutch to prevent slipping. The small thin crutch tips should never be used as they do not make good contact with the ground. The 1½ inch (3.8 cm.) suction tips are the best, as they will remain in contact with the ground no matter at what angle the crutch is placed.

Canadian crutches are extended canes which give support above the elbows. They are useful if the patient has good control of trunk, pelvis and upper extremities. With trunk weakness and poor triceps they will fail their users in performing many activities essential for daily living, particularly opening and closing doors, going up and down stairs and curbs and getting up from chairs. When a hand is needed, it must be taken off the crutch. This is hazardous in case of trunk or triceps weakness, because there is no way of supporting the trunk once the hand is released from the crutch.

It is also difficult for users of Canadian crutches to develop endurance, because they have no opportunity to rest on their armpits and thereby relax the arms and hands, which must be used all the time the crutches are being used. It is only for exceptional patients that the Canadian crutches should be recommended.

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Read in a Panel Discussion on Certain Common Procedures in Physical Medicine and Rehabilitation before the Section on Miscellaneous Topics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

MEASURING FOR CRUTCHES

In measuring a patient for crutches the height of the crutches and the level of the hand piece are primary considerations. If the crutches are too long, they force the shoulders up and the patient has no way of pushing his body off the floor. If the crutches are too short, the subject leans over too far and stands poorly. There are numerous methods recommended for measuring the patient for crutches.

One method, with the patient lying straight in bed, is to measure from the anterior fold of the axilla to a point 6 inches (15 cm.) out from the side of the foot. Another method is to measure from the anterior fold of the axilla to the foot and add 2 inches (5 cm.).

When the subject is standing erect the hand bars are adjusted so that the subject's elbows are bent at an angle of 30 degrees. As the subject becomes accustomed to his crutches, the height of the crutches and of the hand pieces may be changed to suit his individual needs.

MUSCULAR DEMANDS OF CRUTCH WALKING

In order to stand upright and walk alone, as well as to walk on crutches, special muscular development is needed. Walking involves standing erect and advancing one leg forward as the weight of the body is held on the other. The weight is then transferred to the first leg as the step is made on the second. When pathologic conditions occur that prevent these muscle groups from acting together to allow walking, then mechanical aids such as crutches are needed, together with the assistance from muscular groups of the upper extremities and trunk.

In crutch walking the weight of the subject must be taken by the shoulder girdle and upper extremities. The five muscle groups needed particularly for manipulation of crutches are, in order of importance:[1]

1. Flexors of the arms to move the crutches forward.
2. Extensors of the forearms to hold the elbows at the desired angle when the weight of the body is placed on the hands and when the body weight is raised from the floor.
3. Finger and thumb flexors to permit grasping the crutches.
4. Dorsiflexors of the wrists to keep the hands in the correct position on the hand pieces.
5. Shoulder girdle depressors and downward rotators to support the body by means of the crutches when it leaves the floor.

The demands of crutch walking are heavy, and one cannot give a patient a pair of crutches and expect him to walk without adequate muscle power in the crutch-walking muscles.

PREPARATION FOR CRUTCH WALKING

In view of the weakness and flabbiness which inevitably follows inactivity or pathologic conditions which may be present in the muscles, preparation for crutch walking should include (1) a muscle test to discover the extent of muscular weakness, (2) an exercise program to develop strength in the crutch-walking muscles and (3) instruction in how to stand and balance with crutches before taking any steps.

Muscle Test.—The standard muscle test should be given the subject. The results of the test will indicate the exercises to be prescribed and will serve as a guide in the selection of the crutch gait to be used. The ability of a subject to walk cannot be prognosticated from the muscle test, as many patients have the skill

1. Deaver, G. G., and Brown, M. E.: The Challenge of Crutches, Arch. Phys. Med. **26**: 515 (Aug.) 1945.

to use crutches with insufficient muscle power. Every subject should be given a chance to try to work out a method of walking with crutches.

Exercises.—If muscles are not used they naturally become smaller and weaker. Active exercise is essential to maintain and increase the strength of muscles. A person who has been in bed for several weeks cannot be expected suddenly to stand erect and walk without reconditioning the muscle groups needed for standing or walking. Among patients who are going to have a disability and will have to use crutches when they are allowed out of bed or wheelchair, it is advisable to prescribe an exercise program for the specific muscle groups used in crutch walking.

The following exercises are suggestive to strengthen the crutch-walking muscles:

1. Flexion and extension of arms.
2. Coming to sitting position by bending the elbows and pushing the hands onto the bed in such a way as to raise the body by straightening the elbows.
3. Pushing the body off the bed by pushing down on the hands and straightening the elbows.
4. Squeezing grippers.
5. Raising the head and shoulders from bed; reaching forward with the hands as far as possible.
6. Gripping both arms of the wheelchair and raising the body out of the seat of the chair (a good wheelchair exercise to strengthen the shoulder girdle muscles and the extensors of the forearm).

When the patient has developed the necessary strength in the upper extremities, shoulder girdle and trunk muscles he is ready to begin an exercise program in the standing position. It has been found that progress will be more rapid for the severely disabled patients with braces if they learn balance and the arm and foot sequences while holding onto a firm support. If parallel bars are not at hand, two iron beds or tables may be placed with space between in which the patient can walk.

STANDING WITH CRUTCHES

The patient must next get the feel of crutches under his arms in the standing position. He is placed against the wall in a standing position with the crutches under his arms.

The correct crutch stance is a position in which the head is up straight and tall and the pelvis is held as much as possible over the feet. The crutches are placed about 4 inches (10 cm.) in front of the patient and about 4 inches to each side, allowing a large base from which to work. The subject takes his weight mainly on his hands. The elbows are slightly bent. The shoulders are down and not hunched, and the crutches just clear the armpits, so that a minimum of weight is taken by the shoulders. The crutches lean against the ribs and are grasped there by the muscles which draw the arms toward the body. The disability of the patient may make an ideal position on crutches impossible. If he has no abdominal, back or hip joint muscles, the tripod position should be assumed.

PRESCRIBING THE CRUTCH GAITS

The crutch gait to be taught depends on the disabilities and their severity. To determine which of the six crutch gaits the patient can use one must evaluate the following factors:

1. *Step Ability.*—Can the patient take steps with either or both of his lower extremities; that is, can he get one foot in front of the other?
2. *Weight-Bearing and Balance Ability on Lower Extremities.*—Can the patient bear weight and keep his balance on one or both lower extremities?
3. *Weight-Bearing and Balance Ability on Upper Extremities.*—Can the subject push his body off the floor by pressing down on his crutches?
4. *Erect Body Maintenance Ability.*—Can the patient maintain his body erect?

THE STANDARD CRUTCH GAITS

The various standard crutch gaits differ in the combination of crutch and foot or crutches and feet in taking steps and in the sequence of these. Some of the standard crutch gaits have been named two point, three point and four point; they have also been called two count, three count and four count gaits. This has been taken to mean the number of points contacting the floor during a performance of one step. This assumption is logical in the case of the two and four point gaits, but in the so-called three point gait the two crutches and the weaker limb contact the floor simultaneously while the next step is made by the stronger extremity alone. It would seem that this should be called a three point and one point gait. It is possible to establish the meaning of "point" as signifying the number of sounds made on the floor in the course of taking a step with one limb and then the other. However, the name of the crutch gait is immaterial if the combination of crutches and feet and the sequence of the gait are known.

In the following description of common crutch gaits, the crutch-foot sequence is given immediately after the name of the gait. It is assumed in all cases that the patient takes a good stance before attempting any of the gaits.

1. *Four Point Alternate Crutch Gait.*—Crutch-Foot Sequence: (1) right crutch, (2) left foot, (3) left crutch and (4) right foot.

The four point alternate is the most elementary standard crutch gait and consists in advancing one crutch, then the opposite foot, then the other crutch and finally the other foot. At all times there are three points of support on the floor while one crutch is in the air. This is a simple gait if there is a method of getting one foot ahead of the other. It is a safe gait because there are always three points of support on the floor. It is a slow gait because weight must be constantly shifted. It does not require a great deal of space, so it is a good gait to use in crowds or where space is limited.

2. *Two Point Alternate Crutch Gait.*—Crutch-Foot Sequence: (1) right crutch and left foot simultaneously, then (2) left crutch and right foot simultaneously.

Once the four point alternate gait has been mastered, the subject may be taught next the two point alternate gait, which involves placing one crutch and the opposite foot down on the floor simultaneously, then the other crutch and the other foot simultaneously. This is no more than a speeding up of the four point alternate gait. In fact, there are persons using this gait who can walk as fast as an average normal walker making good speed. It requires more balance control than the four point alternate gait because only two points are supporting the body at one time. It does not require a great deal of space.

3. *Three Point Crutch Gait.*—Crutch-Foot Sequence: (1) both crutches and the weaker lower extremity, then (2) the stronger lower extremity.

The three point crutch gait is the one in which the two crutches and the weaker limb are placed on the floor simultaneously, then the stronger limb, which, being strong enough to support the weight of the body, needs no crutches.

This gait is used by those having one lower extremity which cannot take full weight-bearing and one which can support the whole body weight. Both crutches are employed with the weaker lower extremity, while the stronger one takes the whole body weight with no need for crutch aid.

4. *Tripod Crutch Gaits.*—There are two tripod gaits. They are named for convenience the tripod alternate gait and the tripod simultaneous gait.

(*a*) Tripod Alternate Gait: Crutch-Foot Sequence: (1) right crutch; (2) left crutch, then (3) drag body. The tripod alternate gait has been described as follows:[2]

"If the crutches are placed apart and slanted well forward at their lower ends, they form the two anterior points of a tripod, while the third and posterior part of the tripod is formed by the body of the patient inclined forward at its upper part, with the feet well behind. The apex of the tripod thus comes at the shoulder level of the patient, his body and legs forming the posterior support of the tripod, and the crutches the two anterior supports. Such a position is stable because (*a*) the base of support is a large triangle bounded by the three points of support of the tripod and (*b*) the body is stable in the overextended position because hyperextension of the hips is checked by the Y ligament of Bigelow, and, with the knees stiffened by the braces, the center of gravity falls in front of the hip joints and keeps them extended and firm. A paralyzed patient with no power below the waist can stand unsupported easily in this position, provided there are no contraction deformities in the hip, knee or ankle.

"The patient must next be taught confidence in this position. If he has been long confined to his bed or chair he will in large measure have lost his sense of upright equilibrium, which must be dealt with by itself and restored by repeated practice in standing on crutches with support near at hand, or by standing with both hands resting on the foot rail of the bed. When he has sufficiently acquired the sense of balance to have self confidence, he should begin on progression. This is accomplished by hitching one crutch a few inches forward, then the other crutch, and then, in cases of complete flaccid paralysis, jerking the feet forward together a few inches by a body movement, bearing down with the hands on the crutch bars and sliding the feet over the floor. . . .

"The one essential in bad cases is that the tripod should have a large base, and the body be sufficiently inclined forward to keep the center of gravity in front of the hips. If it falls behind them the patient will double up backward like a jackknife on account of flexion of the hips."

(*b*) Tripod Simultaneous Crutch Gait: Crutch-Foot Sequence: (1) both crutches, then (2) drag body. The tripod simultaneous gait differs from the tripod alternate gait in that the two crutches are placed on the floor at once. The body is jerked, dragged or slid along the floor, and the crutches are lifted once more. This becomes the gait described by Wilhelmine Wright as "a sort of rocking backward and forward between crutches and feet."

The tripod gaits are slow, labored gaits for severely disabled subjects who have spastic or flaccid paralysis of the lower extremities. They are the crutch gaits of choice to start those with spinal cord injuries.

5. *Swinging Crutch Gaits.*—The swinging gaits are interesting to analyze. There are two variations, the swinging-to gait and the swinging-through gait.

(*a*) Swinging-To Crutch Gait: Crutch-Foot Sequence: (1) both crutches, then (2) lift and swing body to crutches. The swinging-to gait is the easier, and consists in the subject's placing the two crutches simultaneously in front of the body, bearing down on the crutches and lifting the body so that it moves up to the crutches and immediately lifting both crutches and placing them on the floor ahead.

(*b*) Swinging-Through Crutch Gait: Crutch-Foot Sequence: (1) both crutches, then (2) lift and swing body beyond crutches. The swinging-through gait is more difficult, because the body is swung through the crutches and lands on the ground ahead of them. The crutches are then placed in front of the body, and the gait is continued. This gait requires skill, strength and proper timing. The elements of this gait can be learned by the following drills:

1.—Raising both crutches. Lift both crutches and put them down again in place. Repeat.

2. Wright, W. G.: Crutch Walking As an Art, Surgery **1**: 372 (Dec.) 1926.

2.—Placing crutches backward. The subject should stand in middle of the room with someone behind him. He pushes on his crutches and falls backward. As he falls he raises the crutches and places them on the floor in back of the body. The ability to perform this movement depends on two factors, (1) keeping the pelvis forward and (2) moving the crutches backward to the floor to hold the body. When the patient is able to perform this gait the following sequence will be observed:

1. Patient raises the crutches and replaces them forward.
2. Patient pushes down on crutches, straightens the elbows, raises the body weight off the floor and swings the legs between the crutches.
3. The heels strike the floor in front of the crutches.

The subject is then in the position described in drill 2.

4. He rolls his pelvis forward, and then the momentum brings the trunk and crutches to the erect position.

If the shoulders and crutches move forward ahead of the pelvis the subject will double up like a jackknife and fall backward. Keeping the hips forward as far as possible with the back arched is essential for a smooth and graceful swing-through gait.

CONCLUSIONS

All crutch walkers should learn at least two gaits: a fast one to be used in the open for making speed, as is needed in crossing a street, and a slow one for crowded places, where space is limited but balance must be kept as slow progression is made. However, a subject should be taught as many crutch gaits as he can master. He should know more than one because each crutch gait requires a different combination of muscles, and a disabled person who becomes fatigued with one gait may change to another and thus allow one group of muscles to rest while he puts another to work. Also, each crutch gait can be used as an exercise. Thus all possible locomotion muscle groups may be strengthened.

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WHAT EVERY PHYSICIAN SHOULD KNOW ABOUT OCCUPATIONAL THERAPY

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Most physicians believe that the use of such unprofessional activities as arts, crafts and workaday skills are so far removed from the language and dignity of remedial prescription that they ignore an area of treatment which can be useful and important to their patient. Occupational therapy may be used to hasten physical and functional restoration, provide contentment and even motivation during convalescence and provide the proper direction in the rehabilitation process. In hospitals which have a department of occupational therapy the availability of equipment, material and therapists makes some of the staff physicians conscious of its usefulness and use, but most therapists wage a continuous struggle to interest physicians in its prescription, for as medical specialization grows the specialist focuses on a narrowing area of pathologic conditions while the psychologic and environmental parts of the patient's picture become blurred. At present it is usually the patient or the therapist rather than the physician from whom the request for occupational therapy arises.

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Read in a Panel Discussion on Certain Common Procedures in Physical Medicine and Rehabilitation before the Section on Miscellaneous Topics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

There are many ways in which occupational therapy may be used, but for the sake of simplicity I shall consider them under five objectives: remedial exercise (kinetic), graduation of effort (metric), improvement of tonus (tonic), influence on the mind (psychiatric) and evaluation (diagnostic). Each of these may be and often is tangential or coincident with some of the others.

KINETIC OCCUPATIONAL THERAPY

There are many names for the use of exercise in medicine, the oldest of which is medical gymnastics, the most comprehensive but least used, kinesitherapy. Kinesitherapy means treatment by motion, and it is from this concept that I have labeled kinetic that form of occupational therapy used to restore muscle power, increase joint range and improve muscle coordination. This form of treatment was first described and used by Tissot in 1780 but fell into disuse until its resurrection in France during World War I.

When muscle strength has diminished as the result of disease or immobilization, if innervation is intact or returning, exercise will usually shorten the recovery period. Exercise with or without gymnastic apparatus is usually the treatment of choice, but there are instances in which the execution of motions by means of actual tools or skill-motions is superior. In general it may be said that earliest motions should be occupational and that coordination of the hand and finger motions is best achieved by kinetic occupational therapy. The use of craft tools permits unconscious control of the motion patterns, and by demanding less concentration and offering more pleasure fatigue is forestalled and endurance increased. Specific prescription requires a motor analysis of craft motions in relation to joint range and energy expenditure. Although the physician should have some knowledge of these, the well-trained therapist will frequently know or be able to determine the activity most closely fulfilling the exercise criteria desired. The physician should prescribe duration, frequency, effort and precautions in occupational therapy as in other remedial exercises.

This form of occupational therapy can also be used to mobilize joints and superficial scars, but in almost no instance is occupational therapy an adequate substitute for physical therapy or gymnastics. Few occupational motions carry a joint through its entire range, certainly not as far as passive manipulation or resistance exercises; but since tools may be modified or adapted to fuller ranges or even stretching, occupational therapy should be prescribed to maintain the gains made by physical therapy.

Prolonged immobilization and certain motor neuron lesions result in incoordination. Coordination must be taught to those with cerebral palsy or hemiplegia and to the amputee. Coordination is taught by tedious repetition, and the therapist must have as much patience as the patient has incoordination. The motions of daily living are taught on models which are larger and easier to manage than those encountered in life. As these motions are mastered, finer and more intricate maneuvers are taught with the eventual goal of using ordinary equipment.

METRIC OCCUPATIONAL THERAPY

There are several diseases which require prolonged bed rest but which frequently permit return to partial or complete activity. The most common examples of such conditions are found in cardiac and pulmonary disease. In such conditions return to activity must be gradual. In the past the chief method of measuring and prescribing increased activity was by scheduling progressively increasing daily walks, and this is still a common and useful procedure. Ideally, however, activity should be started in bed. Work may be therapeutic in proper dosage and dangerous in overdosage; occupational therapy offers a method of measuring and increasing work dosage which is not obvious to the patient. The limit of work dosage is called work tolerance and is determined by such indicators as respiratory rate, systemic temperature and fatigue. Occupational therapy may be used not only to improve work tolerance but to measure its progression and furnish prognostic information. Because this type of occupational therapy is so closely dependent on measurement we have called it metric.

TONIC OCCUPATIONAL THERAPY

Most living tissues or processes which are placed at enforced rest will atrophy in some proportion to the period of disuse. When bed rest is part of treatment those muscles normally used in walking, standing and sitting will lose strength. Not only will muscles lose tonus but manual dexterity and mental processes will slowly deteriorate. Bed rest is especially boring because it demands a position uncommon to daily occupations and because, except for passive amusements such as reading or listening to the radio, it is a deterrent to activity. The tone of muscle and mind diminishes, and occupational therapy is almost the only method of obtaining and maintaining the desired level of tone by offering the patient that type of activity most suited to his tastes which will give him maximum exercise within the limits of the disease. Previously this was called diversional occupational therapy, but I have elected to call it tonic because its major function is to restore tone, and it is certainly a more palatable name to physicians. Properly, the term diversional therapy may be limited to the activity which takes the patient's mind off something, such as work which is so absorbing that the patient will forget about an itch or pain.

PSYCHIATRIC OCCUPATIONAL THERAPY

The ultimate aim of all treatment in psychiatry is to return the patient to the community. For a fairly large number, no treatment yet exists which can accomplish this. For those who must remain institutionalized indefinitely, occupation offers a method of halting or diminishing mental deterioration and of providing sheltered employment so that the elementary work appetite may be satisfied. By daily insistence on habit training and the responsibilities of performance the chronic regressed patient can be maintained at a higher level of intelligence, be less of a disciplinary problem and be easier to maintain hygienically. For the patient who will one day return to the community, occupational therapy offers an opportunity to restore confidence and self respect by accomplishing tasks of increasing complexity, by offering an outlet not only for aggressive tendencies but for creative energy. Occupational therapy offers the opportunity for realistic work and brings the patient continuously closer to communal society by group work and group recreation. Once the patient has been discharged from the hospital, the new skills and hobbies he has learned will have mental hygienic values which will give him less time for introspection, less boredom to punctuate with unsocial ideas and acts.

DIAGNOSTIC OCCUPATIONAL THERAPY

Occupational therapy can be of great value not only in arriving at a diagnosis of mental disease by observing and recording reactions to work, the environment and companions but can be of prognostic value in noting the progressive changes toward one or another extreme. It is also of great value as a means of evaluating the suitability of a new job objective. Regardless of his disease or disability, the counselors and physicians may determine that the patient must change his occupation. After a new occupational objective has been determined, the patient may try the basic technics of that position in the occupational therapy clinic, and observers may determine his physical, emotional and endurance suitability.

CONCLUSION

In this outline emphasis has been placed largely on the hospital aspects of occupational therapy in chronic disease.

The practitioner who wishes to give the best possible medical care can and should apply the principles of occupational therapy to the homebound patient.

WHAT EVERY PHYSICIAN SHOULD KNOW ABOUT PRESCRIBING PHYSICAL THERAPY

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Any consistently successful use of physical therapy is dependent on accurate prescription and guidance by the physician. For physical therapy as for drugs, the use of the written prescription is essential. The major purposes of written prescriptions in physical therapy are: (1) to instruct the technician in the procedures to be carried out; (2) to insure the physician that his orders will be followed, and (3) to provide an adequate record of treatment given.

Only licensed physicians should be permitted to prescribe physical therapy. In preparing the prescription, the physician should have a working knowledge of the physiologic effects of the various physical therapeutic procedures. He should be familiar with the indications for and contraindications to their use. It is essential that he know about the training, special abilities and limitations of the technicians who are to carry out his prescriptions, and also what equipment and facilities are available.

Before physical therapy is prescribed, the following questions should be considered: (1) has a correct or adequate working diagnosis been established? (2) has physical treatment proved beneficial for the condition diagnosed? (3) what physical therapeutic procedures may be indicated and what procedures may be contraindicated? (4) what results are anticipated? and (5) how many treatments may be needed?

The patient's physician should prepare him for the treatment, so that he will understand something of the importance or place of physical therapy in his treatment program, what results are to be anticipated and how soon results may be noted. The physician should discuss the problem of cost with the patient and help him ascertain whether or not he is entitled to assistance from hospitalization or disability insurance.

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Read in a Panel Discussion on Certain Common Procedures in Physical Medicine and Rehabilitation before the Section on Miscellaneous Topics at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1949.

PITFALLS IN THE PRESCRIPTION OF PHYSICAL THERAPY

If the various pitfalls which occur in the prescription of physical therapy are avoided, better results can be anticipated, fewer treatments may be needed and the efficiency of the technician can be increased.

An unnecessary delay in starting physical therapy is one of the most common pitfalls. Too often it is anticipated that stiffness of joints or muscular pain will "work itself out" with the help of some inadequate instruction for exercises given to the patient in the office.

The use of a shotgun type of physical therapy prescription is to be avoided. The prescription may call for heat, massage and exercise, when an exercise program alone would be sufficient.

When patients are not selected with care, poor results from physical therapy will occur. Patients who have hopeless conditions and certain functional complaints benefit little. Most patients whose complaints are primarily functional should not receive physical therapy unless they understand the functional aspect of their problems and the place of physical therapy in their treatment.

A most serious pitfall which too often arises in the prescription of physical therapy is that a technician, with limited medical training, is expected or advised by the physician to recommend the procedures to be used in the treatment. In these instances the physician is sponsoring the unethical practice of medicine by technical personnel not qualified or licensed to practice medicine.

When the patient prescribes his own treatment, with the physician permitting the technician to accede to the patient's whims, physical therapy is being exploited.

A vague or muddled prescription will be of little help to the technician.

When the treatments are too infrequent or too few, poor results may occur. Usually, daily physical therapy is indicated. Weekly treatments are of little or no value.

Inadequate follow-up by the physician may be a cause for failure of physical therapy. Reevaluation of the patient's condition and his treatment should be made at regular intervals, and the treatment should be modified as the condition changes.

Last, physical therapy should not be prolonged past the point at which the patient has received maximal benefit, or at which he could continue adequately on a regimen of treatment at home.

ESSENTIALS OF THE PHYSICAL THERAPY PRESCRIPTION

There are certain essentials that should appear in every physical therapy prescription. These include (1) the diagnosis; (2) parts to be treated; (3) specifications regarding the procedures to be used; (4) special instructions regarding the removal of splints, braces or dressings during treatment, or cautions regarding anesthetic areas; (5) an outline of what home instructions are to be given; (6) the number and frequency of treatments, and (7) the date for reexamination.

The physical therapy prescription should be written by the physician on the physical therapy record sheet

given to the technician and later filed with the patient's permanent history. In some instances an ordinary prescription blank can be used.

It will be possible to outline only a few of the main principles to be considered in prescribing the physical procedures of thermotherapy, hydrotherapy, massage, electrical stimulation, therapeutic exercise and ultraviolet therapy.

Thermotherapy.—When vasodilatation, relief of pain or muscular relaxation is desired, heat may be prescribed as a therapeutic agent. It is often used to prepare a part for massage and therapeutic exercise. The thermotherapy prescription should include (1) the source, such as short wave diathermy or infra-red lamp, (2) the part to which the heat is to be applied and (3) the dose in terms of time of application and intensity. In a prescription for short wave diathermy, where numerous methods of application are available, it is desirable to indicate whether an induction coil or drum type of applicator is preferred. If general body heating is desired, this can be simply arranged by prescribing the application of two large luminous heat bakers over the entire body. Other methods for general body heating include the use of hot packs, the Hubbard tank or the ordinary hot tub bath.

Hydrotherapy.—In prescribing treatment utilizing the Hubbard tank, the hot tub bath, the whirlpool bath or contrast bath, the physician should indicate the temperature of the water, the duration of the bath and, if the treatment is local, the part to which treatment should be applied. In prescribing the use of hot packs, the type of packs should be indicated as well as the total time for packing and the number of changes of packs that are expected.

Massage.—Massage as a therapeutic procedure often is misused. Its physiologic effects are limited. It is a procedure that may be pleasing to the patient, but it is time-consuming for the technician. The use of general body massage as a sedative should be discouraged. The type of massage should be definitely stated; whether it be stroking, kneading, friction or percussion, or some combination. The prescription should specify whether the massage should be light or deep, or of a stimulating or sedative type. The part to be massaged should be indicated. The primary contraindications to massage should be constantly kept in mind. It should not be employed in the presence of most psychoneuroses, in obesity as a reducing procedure, over cancerous areas or areas of suspected cancer, over tissue with associated infection, or as a method of strengthening muscles. Massage is of most value to a patient who has flaccid paralysis, arthritic conditions of moderate severity or fibrositis, or who is recovering from sprains and strains.

Electrical Stimulation.—When electrical stimulation of various muscle groups or nerves is indicated, it is essential that the physician prescribing it have complete knowledge of the electrical reaction in the part to be treated. If a partial or complete reaction of degeneration is present, this information should be included in the prescription. The type of current selected will, of course, depend on the apparatus available and on whether the nerve shows a reaction of degeneration. The prescription should include specification of the nerves or muscles to be stimulated, type of current and frequency of oscillations, intensity of current, the approximate number of contractions desired and the frequency of treatments. A faradic current or some form of a modified rapid sinusoidal current may be useful when the nerve supply to the muscle is intact. In a denervated muscle an interrupted galvanic current or a low frequency sinusoidal current may be most useful for obtaining contraction.

Therapeutic Exercise.—A prerequisite for the successful prescription of therapeutic exercise is thorough evaluation of the malfunction. Muscle tests may be indicated; the status of the bones and joints, as well as the general condition of the patient, should be well recognized. When these facts have been ascertained, the physician can prescribe exercises for the strengthening of certain muscles and other exercises for joints and muscles which may need mobilization. The prescription should indicate exercises within the general tolerance of the patient. The type of exercise should be specified; whether it is to be passive, active, active assistive, resistive for muscle strengthening, muscle reeducation, relaxation or coordination. If resistive exercise is to be carried out, suggestions should be made as to the type and amount of resistance to be used for strengthening certain groups of muscles. If assistive apparatus is to be used, such as a shoulder wheel or shoulder ladder, the exercise bicycle, the powder board or rowing machine, this should be specified. If crutch walking or gait training is to be a part of the exercise program, details as to the type of gait should be prescribed and preliminary exercises outlined. For many patients the therapeutic exercise program is one of the most important phases of the physical therapy. However, many times it results in failure. The chief reasons for failure are: (1) too short or too infrequent exercise periods; (2) improperly prescribed program; (3) lack

TABLE 1.—*Sample Prescription: Therapy for Subdeltoid Bursitis, Acute or Subacute*

Treatment *	Time, Minutes	Specifications †
Short wave diathermy...	30	Coil or drum, right shoulder
Massage.....	10	Light to deep stroking and kneading to right shoulder
Exercise.....	10	Relaxed passive; active and assistive: graduated as tolerated, attempting normal range; shoulder wheel and ladder, when tolerated

* Treat twice a day; physician to be seen after two days.
† Instructions: (1) heat lamp thirty minutes twice a day for home use; (2) Codman exercises.

TABLE 2.—*Sample Prescription: Therapy for Colles' Fracture Five Weeks After Reduction, with Shoulder and Hand Stiffness*

Treatment *	Time, Minutes	Specifications †
Hydrotherapy.....	30	Whirlpool bath, water temperature 110 F., right arm and hand
Massage.....	10	Deep stroking and kneading, right hand, elbow and shoulder; friction: wrist and fingers
Exercise.....	10	Active and assistive: attempt normal range, hand, elbow and shoulder; moderate forcing to shoulder and fingers

* Treat daily for two weeks; physician to be seen after one week.
† Instructions: (1) contrast baths for hands; (2) active hand and shoulder exercises daily at home.

of care in administering and supervising the exercises, and (4) lack of cooperation and willingness to work on the part of the patient.

Ultraviolet Therapy.—Ultraviolet therapy occasionally is indicated for certain diseases of the skin. The prescription for ultraviolet light should include the source to be used, such as the hot quartz mercury vapor arc lamp; the dose prescribed should be in terms of the minimal erythema dose. Treatments may be started with 2 minimal erythema doses and increased by ½ or 1 minimal erythema dose every other day. The prescription is modified according to the condition being treated, the response of the patient and the original degree of pigmentation of the patient's skin. The area to be treated must be specified, and the time for the reexamination indicated.

TABLE 3.—*Sample Prescription: Therapy for Median Nerve and Flexor Tendon Laceration, Right Forearm*

Treatment *	Time, Minutes	Specifications †
Hydrotherapy	30	Whirlpool bath, right hand and arm: water temperature 104 F. (anesthetic area right palm)
Massage	10	Stroking and kneading, right hand and forearm; friction along scar
Electrical stimulation	..	Galvanic or low frequency sinusoidal: intrinsic hand muscles supplied by median nerve 30 to 50 contractions daily
Exercise	..	Active and assistive: attempt normal range, wrist and hand flexors and extensors; reeducation: intrinsic hand muscles; gentle stretching for long flexors

* Treat daily; physician to check every other day.
† To occupational therapy for activities to encourage use of the fingers.

TABLE 4.—*Sample Prescription: Therapy for Acne Vulgaris*

Treatment *	Time	Specifications
Ultraviolet (hot quartz mercury vapor lamp)	2 minimal erythema doses; increase to 10 minimal erythema doses	1 exposure, face, neck, anterior part of chest; increase dose by 1 minimal erythema dose at each treatment

* Treat three times weekly; total number of treatments, 15; recheck every two weeks.

Illustrative Physical Therapy Prescriptions.—The sample prescriptions (tables 1 to 4) illustrate some of the foregoing principles. In each instance the prescription is brief, would take little time to prepare, and is detailed enough to give the technician definite instructions regarding the treatment. These are not to be considered as standard or routine prescriptions, or necessarily as ideal prescriptions, for all patients with the conditions listed. Each physical therapy prescription must be individualized and designed to meet the specific needs of the patient.

SUMMARY

Any physician with some fundamental knowledge of physical procedures can prescribe physical therapy satisfactorily for many of the patients seen in ordinary office and hospital practice.

When a physiatrist is not available, the prescription for physical therapy is the responsibility of the patient's physician.

The prescription should be brief and definite and should contain enough detail to instruct the technician adequately regarding the treatment desired.

Success of physical therapy is, in part, dependent on the proper selection of patients, the preparation of an adequate prescription, with provision for a sufficient number of treatments, regular reevaluation of the patient's condition and modification of treatment as the condition changes.

ABSTRACT OF DISCUSSION

On Papers by Deaver, Licht and Martin

QUESTION: Discuss the use of overhead trolleys and halters in teaching crutch walking to severely disabled persons.

DR. GEORGE G. DEAVER, New York: We do not use the overhead trolleys in teaching crutch walking. It gives the patient a false sense of security and does not develop the proper skills. If a patient is taught the crutch gait best suited to his disability in the proper sequence he will not need the overhead trolley.

QUESTION: Kindly mention a few words about canes, their indication, and collapsible crutches.

DR. GEORGE G. DEAVER, New York: If it is possible, endeavor to have your patient discard crutches for canes, and perhaps he can be taught to free himself from the canes. Never give an amputee with an artificial leg a pair of crutches. We teach our patients how to use his prosthesis in the parallel bars, and then he is given canes. Once an amputee uses crutches with his artificial leg it is almost impossible to have him give them up. Collapsible crutches are now being developed. Dr. Abramson of the Veterans Administration is working on a metal crutch which can be telescoped and carried in a suitcase or placed under a wheelchair. At present there is none that adequately meets our needs.

QUESTION: Do you recommend the use of sawed-off crutches on the mat in preparation for crutch walking? If so, when should their use be taught in relation to the total program?

DR. GEORGE G. DEAVER, New York: In reference to the sawed-off crutches, these are essential for the training of paraplegic patients. Every one of our paraplegic patients is given the conditioning exercises on the mat with the sawed-off crutches to develop strength of the arms and to learn the movement of the crutches. It is important to keep in mind the danger of fracture of the femur in paraplegic patients who are given conditioning exercises on the mat. The great majority of these patients have osteoporosis, and the femur will fracture with little strain and stress.

QUESTION: What quantitative objective tests are recommended for determining effectiveness of mediums employed in kinetic occupational therapy?

DR. SIDNEY LICHT, Cambridge, Mass.: There are several tests which can be used to determine the effectiveness of kinetic occupational therapy, and these have been described in the literature recently. One of these is based on the productive output of the patient which if measured and recorded on successive days will result in a graphic portrayal of progress in strength, joint range and coordination.

QUESTION: Should selected occupational therapy follow immediately after treatment in the physical therapy department, the latter lasting an hour? If not, how often and when does occupational therapy fit into the over-all program?

DR. GORDON M. MARTIN, Rochester, Minn.: I think that is a problem that has to be definitely individualized for every patient. If the patient is hospitalized, the occupational therapy can be given more satisfactorily at some other part of the day than immediately before or after the physical therapy. Usually, it is well for a patient following a strenuous exercising program in physical therapy to have an opportunity to rest before he undertakes the exercises in the kinetic phases of his occupational therapy program.

Clinical Notes, Suggestions and New Instruments

AGRANULOCYTOSIS DURING THERAPY WITH THE ANTIHISTAMINIC AGENT METHAPHENILENE (DIATRIN®)

TRUMAN G. DRAKE, M.D.
St. Louis

In March 1945 Clement and Godlewski [1] reported a case of agranulocytosis in a girl 13½ years of age with asthma after she received three weeks of treatment with a synthetic antihistaminic agent 2339 RP (N-benzyl-N-phenyl-N′,N′-dimethylethylenediamine hydrochloride). Blanton and Owens [2] have reported a similar case following eight weeks of therapy with tripelennamine hydrochloride (pyribenzamine hydrochloride,® or N,N-dimethyl-N′-benzyl-N′-[alpha-pyridyl] ethylenediamine hydrochloride). The present report concerns the occurrence of agranulocytosis in a man aged 81 after he received seven weeks of treatment with methaphenilene hydrochloride (diatrin hydrochloride,® or N,N-dimethyl-N′-phenyl-N′-[2-thenyl] ethylenediamine hydrochloride)—a homolog of tripelennamine hydrochloride.

REPORT OF CASE

J. M., a man aged 81, a retired grocer, had been seen intermittently since May 21, 1946 because of chronic bronchitis. The nasal mucosa was hypertrophic and varied from a pale boggy appearance to a dull red. Polyps nearly blocked the left nasal fossa, and at times yellowish mucopurulent drainage could be seen in the left middle meatus and on the posterior pharynx. The nasal secretion contained predominantly pus cells with a sprinkling of eosinophils. The anterior sinuses transilluminated poorly, and the roentgenogram of the chest showed increased markings, especially to the bases, typical of the "sinus lung."

The patient had had recurrent psoriasis as long as he could remember, but otherwise he had been well.

He steadfastly refused any local nose and throat treatment and was persuaded to consult an otolaryngologist only once during more than three years. Therapy was varied and for the most part symptomatic. In July 1946 diphenhydramine hydrochloride (benadryl hydrochloride®) was given, 50 mg. four times daily, for two weeks with at most doubtful benefit.

On June 22, 1949 there was an increase in nasal discharge and in cough. It was decided to try another antihistaminic agent, methaphenilene hydrochloride, 50 mg. every eight hours. When the patient was seen July 8 he stated that the new medicine had relieved congestion in his head and that the cough was better. The nose was free of any secretion, and the mucosa was nearly normal except for the polyps.

The patient returned to the office August 12 complaining of slight headache for two days. On the previous morning he had used up the last methaphenilene tablet. While he was in the examining room he began to shiver as though having a chill, and his temperature was 101.4 F. with a pulse rate of 110. Physical examination revealed essentially normal conditions. The white blood cell count was 3,600, and a virus infection, possibly of the influenzal type, was considered the most likely diagnosis. He was placed on bed rest and given aureomycin 250 mg. every four hours. A blood smear was taken at the time, but the result was not reported immediately. When this differential count was discovered (three days later) to show 99 per cent lymphocytes and 1 per cent monocytes the patient was seen at home immediately and was found to have fever (103 F.), a dull red throat and a few moist rales at both lung bases. He was at once hospitalized and started on a regimen of penicillin 100,000 units every three hours. On the following morning he was given a transfusion of 500 cc. of blood.

For three days the condition of the patient was critical. The temperature ranged from 100.4 to 105 F. rectally. There was great prostration, weakness, semistupor, disorientation, dysphagia and incontinence of urine and feces. A roentgenogram of the chest showed only the previously noted increased markings.

On the second day he was given dihydrostreptomycin 250 mg. every six hours to attain wider antibacterial effect. On the fourth hospital day he was definitely improved (appetite returning, more alert, temperature 100 F. rectally), but the throat was still slightly red and the basal rales persisted. Accordingly he was given another transfusion, following which he had a chill and fever (103 F.) lasting twelve hours. After this the temperature remained normal, and improvement was rapid and steady.

Streptomycin therapy was stopped on the eighth hospital day, the patient was up on the ninth, and penicillin therapy was discontinued on the eleventh. Because of his age and the necessity that he be strong enough to climb stairs at home he was kept in the hospital for convalescence until the nineteenth day. At the time of discharge he felt well, his chest was clear, and he had no more than his usual amount of sinus drainage and cough. He remained well to the date of last examination, Sept. 14, 1949.

To subject the patient to test doses of the antihistaminic drug to establish absolute proof of the cause-effect relationship in the agranulocytosis was considered unjustifiable. No other drug was being taken at the time of the reaction. The accompanying table gives the hematologic observations and dates.

Hematologic Observations

Date 1949	Hb. %	R. B. C. (Millions)	W. B. C.	Blood Smear* B	E	M	J	St.	Seg.	Lym.	Mo.
Aug. 12	..	....	3,600	..	..	..	..	..	..	99	1
Aug. 15	62	3.8	1,000	..	..	..	..	..	..	100	..
Aug. 17	62	3.23	1,200	..	..	..	..	2	4	85	9
Aug. 19	76	4.04	1,000	(thrombocytes 290,000)							
Aug. 21	..	....	2,700	1	..	..	1	7	10	78	3
Aug. 23	82	4.07	2,900	..	2	..	..	12	29	50	8
Aug. 26	84	4.33	7,300	..	..	..	..	1	54	38	7
Sept. 2	94	4.68	9,900	..	..	..	..	2	52	44	4
Sept. 14	88	4.46	12,700	..	2	..	..	2	60	36	..

* The letters, B, E, M, J, St., Seg., Lym. and Mo. signify basophils, eosinophils, myelocytes, juvenile cells, stab cells, segmented cells, lymphocytes and monocytes, respectively.

A sternal marrow needle biopsy was done by Dr. Grace E. Bergner on Aug. 23, 1949. On gross inspection the bone marrow was normally cellular. The differential count showed 12 segmented polymorphonuclear cells, 23 band cells, 51 C myelocytes, 8 B myelocytes, 1 megakaryocyte, 4 reticulum cells and 3 plasma cells, a total of 102; there were 126 normoblasts and 21 late erythroblasts, a total of 147. The marrow showed depression of the white cell series in that the ratio of leukocytes and nucleated red cells, normally 4 or 5 to 1, was reversed and in that the red cell elements were preponderant in the ratio of 3:2.

SUMMARY AND CONCLUSIONS

A case of agranulocytosis following the administration of methaphenilene hydrochloride (diatrin hydrochloride®) is reported. This is the third time to my knowledge that such an untoward reaction to an antihistaminic drug has been reported, and the first time to methaphenilene. Fortunately in all 3 instances the patient recovered. In view of the wide use of these agents, such reactions must be rare but should be considered when anyone who is taking these drugs contracts an unexplained illness. Clement and Godlewski pointed out that the synthetic product used in their study contains two benzene rings, and it seems plausible that such chemical structure increases the probability of granulocytopenic effect.

ADDENDUM

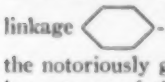
Since submission of the foregoing article, an additional case of agranulocytosis following tripelennamine (pyribenzamine®) has been reported [3] and another cited in the same communication. A study of the chemical structure of those antihistaminic prep-

From the Department of Internal Medicine, Washington University School of Medicine, and the Missouri Baptist Hospital.

1. Clement, R., and Godlewski, S.: Agranulocytose aiguë curable apparue au cours du traitement d'un asthme par un antihistaminique de synthèse, Bull. et mém. Soc. Méd. d'hôp. de Paris **61**: 103 (March 2) 1945.

2. Blanton, W., and Owens, M.: Granulocytopenia Due Probably to "Pyribenzamine," J. A. M. A. **134**: 454 (May 31) 1947.

3. Cahan, A. M.; Meilman, E., and Jacobson, B. M.: Agranulocytosis Following Pyribenzamine, New England J. Med. **241**: 865-867 (Dec. 1) 1949.

arations whose use thus far has been reported to be associated with agranulocytosis, reveals that all have the "benzamine" linkage  , which also is in the structure of aminopyrine, the notoriously granulocytopenic drug of two decades ago. The importance of this linkage was pointed out by Kracke.[4] The fact that in diphenhydramine (benadryl®), the first widely used antihistaminic agent in this country, the benzene rings are attached to a carbon rather than a nitrogen atom may explain why agranulocytosis has not been reported following its use.

114 North Taylor Avenue (8).

ADJUSTING THE COLLAR FOR TRACHEOTOMY IN A PATIENT IN A RESPIRATOR

A Simple Emergency Method

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and
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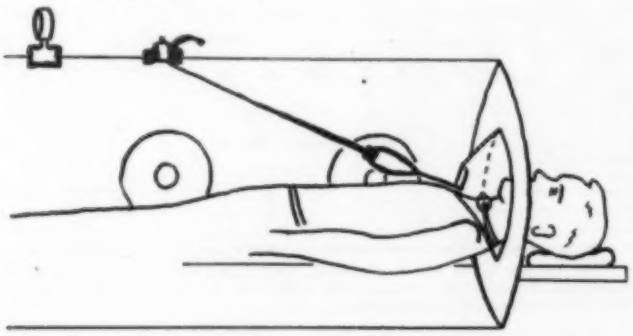
During the recent epidemic of poliomyelitis in New York State, several patients with the bulbar-respiratory type of the disease who had been placed in one of the common cylinder type (Emerson) respirators required emergency tracheotomy. The problem arose of how best to adjust the rubber respirator collar about the patient's neck to make room for the tracheotomy tube without interfering with the air-tight fit essential to the efficiency of the respirator.



Schematic illustration showing use of abdominal retractor to adjust collar for tracheotomy in a patient in a respirator.

Various methods attempting to solve this problem have been described by others,[1] but in our hands the emergency method devised by us has proved both simple and efficient. The equipment necessary for this method consists of (1) any medium-sized retractor of the type commonly used in abdominal surgery, (2) a roll of 1 inch (2.5 cm.) gauze and (3) a band of 2 inch (5 cm.) stockinet, 1½ feet (46 cm.) long, stuffed with cotton.

The retractor blade is hooked underneath the anterior margin of the rubber respirator collar from within the respirator, and the collar is retracted toward the patient's suprasternal notch. A double length of 1 inch roller gauze is tied to the retractor handle and brought up through the hole provided by removal of the screw plug from the top center surface of the respirator cylinder. When the proper amount of tension has been applied to the roller gauze to provide sufficient retraction of the respirator collar, the screw plug is replaced, and the roller gauze is thereby fastened at the point from which traction proves to be at an optimum angle to prevent leakage from distortion of the collar.

The band of cotton-padded 2 inch stockinet is wrapped comfortably around the patient's neck to prevent minor leaks and chafing. A soft gauze pad may be placed under the retractor handle so that it rests comfortably on the patient's chest.

4. Kracke, R. R., and Parker, F. P.: The Relationship of Drug Therapy to Agranulocytosis, J. A. M. A. **105**: 960-966 (Sept. 21) 1935.

Resident in Otolaryngology (Dr. Allen) and Assistant Attending Anesthetist (Dr. Landmesser), Albany Hospital.

1. Demshki, A. E., and McClure, E. J.: The Air Seal Device for the Tracheotomized Respirator Patient, Am. J. Nursing **49**: 448 (July) 1949, pt. 2; Carlson, E. N., and Dudley, E. M.: ibid. **49**: 450 (July) 1949, pt. 2.

Council on Foods and Nutrition

HUMAN REQUIREMENT OF CALCIUM, PHOSPHORUS AND MAGNESIUM

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Iowa City

This paper was prepared at the request of the Council and is one of a series appearing in THE JOURNAL. *In the near future the entire series will appear in book form as the Council's Handbook of Nutrition.* JAMES R. WILSON, M.D., *Secretary.*

Calcium, phosphorus and magnesium are usually considered together, from a nutritional point of view, because all three occur in bone, and, with carbonate, make up the major part of the bone mineral. The metabolic paths of the three elements are by no means wholly parallel, even though the major part of the body content of each is found in the same tissue. Whereas 99 per cent of body calcium is found in the skeletal structures, bones and teeth, both phosphorus and magnesium are important constituents of soft tissue also. The small amount of calcium not in bone is a component of extracellular fluid; magnesium and phosphate, on the other hand, are components of intracellular fluids, and the phosphate radical appears to be essential in an ever increasing number of metabolic reactions.

Milk and its derivatives, such as cheese and ice cream, are the chief sources of calcium in the diet and provide ample phosphorus for its utilization. Other protein-rich foods, as meat, eggs, fish, cereals and legumes, contribute much phosphorus and a considerable percentage of the daily magnesium intake but add little or no calcium to the diet. The acidity of many fruits is in part due to acid phosphates.

Foods containing oxalic or benzoic acids, as spinach, beet greens and cranberries, decrease the absorption of calcium and magnesium, as the oxalates and benzoates of these minerals are insoluble. A high ratio of phosphorus to calcium and magnesium in the diet also depresses their absorption, as these phosphates are less soluble in the presence of an excess of phosphate ion. The phosphorus of whole grain cereals is largely in the form of phytin. Calcium and magnesium phytates are highly insoluble, so the ingestion of phytin usually results in the loss of its own phosphorus together with calcium and magnesium supplied by other foods except as vitamin D makes some of the phytin phosphorus available. As the calcium is more apt to be in short supply than is dietary phosphorus, countries using whole grain flour often add calcium carbonate in sufficient quantity to compensate for the phytin content of the flour.[1]

With the dietary patterns common to this country, dietary deficiency of phosphorus is unlikely; deficiency of calcium is common.

In order to understand the factors determining the daily requirement of these elements, a brief résumé of the intermediary metabolism of each is presented.

CALCIUM

The intermediary metabolism of calcium is schematically represented in figure 1. The amount actually available to the body is the amount absorbed from the

From the Department of Pediatrics, College of Medicine, State University of Iowa.

1. McCance, R. A., and Widdowson, E. M.: Mineral Metabolism, Ann. Rev. Biochem. **13**: 315, 1944.

gastrointestinal tract. To be absorbed, the calcium salt must be in solution. Calcium salts, as they occur in foods, are not easily soluble in neutral or alkaline solution. Their absorption, therefore, occurs largely in the upper part of the small intestine while its contents are still somewhat acid. Calcium absorption will thus depend in considerable measure on the maintenance of a normal gastric acidity. Vitamin D increases the amount of calcium absorbed from the small intestine,[2] though the mechanism of its action is not fully understood. The ingestion of lactose and especially of protein [3] are known also to increase the absorption of calcium. On the other hand, calcium salts of fatty acids, the calcium soaps, are highly insoluble, as are oxalates, benzoates and phytates. These are precipitated in neutral or alkaline mediums.

Regardless of intake, calcium is never completely absorbed. Food calcium is not the only source of calcium entering the gastrointestinal tract. The amount of calcium entering the tract as a component of digestive secretions seems to be little appreciated but is of very real importance. According to Gamble [4] the volume of digestive secretions produced each 24 hours by an adult of average size averages 8,200 cc., or over 2.3 times the mean plasma volume of 3,500 cc. Logan [5] places the range of volume of digestive secretions at 4,000 to 10,000 cc. The amount of calcium in these secretions varies from 5 to 10 mg. per 100 ml.[2b] and averages approximately 8 mg. per 100 ml. Thus from 0.3 to 0.8 Gm., with a mean of about 0.65 Gm. of calcium, is secreted into the gastrointestinal tract daily. Many adults ingest much less than 0.8 Gm. of calcium a day. If conditions in the tract do not favor absorption, much of the calcium of the digestive secretions, as well as that of the food, will be excreted. Hence, particularly when the calcium intake is low, fecal excretion may greatly exceed intake.

Calcium is absorbed directly into the plasma, where it is maintained at a level of approximately 10 mg. per 100 ml. largely through the action of the parathyroid hormone. The level of plasma calcium also tends to vary in the same direction as the serum protein and inversely as the serum inorganic phosphorus. About half the plasma calcium is in ionized form. Calcium is distributed through the other extracellular fluids of the body in amounts decreasing with the protein content of the given fluids. Cerebrospinal fluid contains only 5 to 6 mg. per 100 ml.

Other than the small but important amount of calcium remaining in extracellular fluids of the body, absorbed calcium is quickly deposited in bone. The process of deposition of mineral in bone is complicated and not fully understood. The physicochemical laws of precipitation of salts from solution are insufficient to explain the process. A phosphatase active in alkaline medium [6] and possibly other enzymes are concerned. Considerable evidence points toward vitamin D as a factor in calcification of bone as well as in absorption of calcium.[7] The importance of vitamin C has been demonstrated for the calcification process, as well as for the integrity of the matrix [8]; still other factors are postulated. Other authors have discussed more fully the factors involved in the mineralization of bones and teeth.[9]

Calcium and phosphorus are deposited first in the epiphysis of growing bone and thence transferred to the diaphysis from which they are removed slowly, according to studies using radioactive isotopes.[10] New mineral is deposited to replace that removed.

The factors governing deposition of mineral in teeth are presumably similar to those affecting its deposition in bone. Studies of radioactive phosphorus show that the metabolic rate of teeth is considerably slower than that of bone; the rate of "turnover," that is, deposition and withdrawal of mineral from enamel, is extremely slow. The biochemistry of teeth has been recently reviewed by Leicester.[11]

Removal of mineral from bone is dependent, at least in large part, on the activity of the parathyroid hormone, which maintains serum calcium at a constant

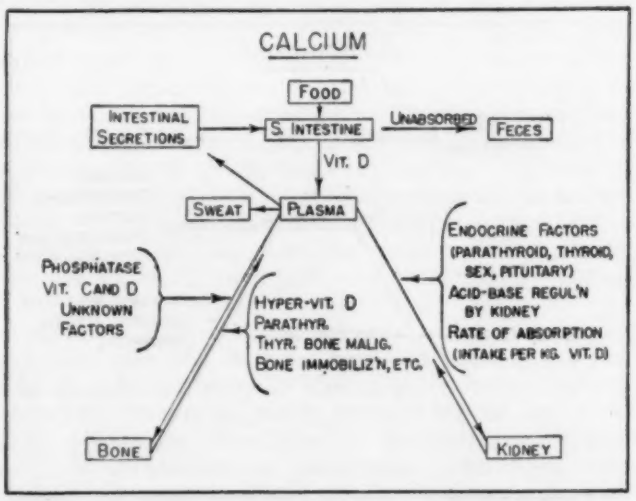


Fig. 1.—Schematic representation of the metabolism of calcium.

level, using bone as a reservoir. In certain circumstances, mineral is removed from bone more rapidly than it is deposited, resulting in osteoporosis. Such removal may be limited to one bone only, because of immobilization of that bone or to disease affecting one bone only. Often the demineralization is general and very gradual, as, for example, the osteoporosis of middle or old age, which is probably the result of several factors, as poor circulation due to decreased exercise, atrophy of bone matrix or ingestion of a calcium intake insufficient to permit replacement of normal loss. The effect of a long-continued low calcium intake will be aggravated if the customary diet is acid in ash, requiring additional body base for neutralization. More rapid

2. (*a*) Nicolaysen, R.: Studies upon the Mode of Action of Vitamin D: II. The Influence of Vitamin D on the Faecal Output of Endogenous Calcium and Phosphorus in the Rat: III. The Influence of Vitamin D on the Absorption of Calcium and Phosphorus in the Rat, Biochem. J. **31**: 107 and 122, 1937; (*b*) Untersuchung über die Kalk ausscheidung bei Hunden, Skandinav. Arch. f. Physiol. (supp.) **69**: 1, 1934. (*c*) Nicolaysen, R., and Jansen, J.: Vitamin D and Bone Formation in Rats, Acta paediat. **23**: 405, 1939.

3. McCance, R. A.; Widdowson, E. M., and Lehmann, H.: The Effect of Protein Intake on Absorption of Calcium and Magnesium, Biochem. J. **36**: 686 (Sept.) 1942.

4. Gamble, J. L.: Chemical Anatomy, Physiology and Pathology of Extracellular Fluid, Cambridge, Massachusetts, Harvard University Press, 1947.

5. Logan, M. A.: Recent Advances in the Chemistry of Calcification, Physiol. Rev. **20**: 522 (Oct.) 1940.

6. Robison, R.: The Significance of Phosphoric Esters in Metabolism, New York, The New York University Press, 1932.

7. Greenberg, D. M.: Studies in Mineral Metabolism with the Aid of Artificial Radioactive Isotopes, J. Biol. Chem. **157**: 99 (Jan.) 1945.

8. Bourne, G.: Some Experiments on the Possible Relationship Between Vitamin C and Calcification, J. Physiol. **102**: 319, 1943.

9. (*a*) Logan.[5] (*b*) Sobel, A. E.; Rockenmacher, M., and Kramer, B.: Composition of Bone in Relation to Blood and Diet, J. Biol. Chem. **159**: 139 (June) 1945. (*c*) Manly, M. L., and Bale, W. F.: The Metabolism of Inorganic Phosphorus of Rat Bones and Teeth as Indicated by the Radioactive Isotope, J. Biol. Chem. **129**: 125 (July) 1939. (*d*) Greenberg, D. M.: Mineral Metabolism: Calcium, Magnesium and Phosphorus, Ann. Rev. Biochem. **8**: 269, 1939. (*e*) Hevesy, G.: Application of Radioactive Indicators in Biology, Ann. Rev. Biochem. **9**: 64, 1940. (*f*) McLean, F. C.: Physiology of Bone, Ann. Rev. Physiol. **3**: 79, 1943. (*g*) Sendroy, J., Jr.: Mineral Metabolism, Ann. Rev. Biochem. **14**: 407, 1945.

10. Greenberg,[7] Hevesy.[9e]

11. Leicester, H. M.: The Biochemistry of Teeth, St. Louis, C. V. Mosby Company, 1949.

and general loss of bone mineral occurs with the production of excessive amounts of acid in the body or with an excessive production of parathyroid or thyroid hormone. Excessive intake of vitamin D or dihydrotachysterol likewise results in an outpouring of mineral from bone.

The factors influencing excretion of calcium in urine have been carefully studied by Knapp.[12] These include the quantity of calcium intake, the skeletal size, the acid-base regulation of the body and especially the "endogenous factor(s)" assumed to be the resultant of various body hormones, chiefly those of the parathyroid and thyroid, but also including to a lesser degree the sex and pituitary hormones. Probably because of these endogenous factors, the normal range of variation of urinary calcium is far wider than is usually appreciated; the maximum normal excretion at any level of intake per kilogram is approximately 10 times the minimum. Thus if two persons are of equal size and are given the same dietary regimen, one may normally excrete 25 mg. of calcium daily and the other 250 mg. a day. Obviously the second person needs a higher intake for maintenance than does the first.

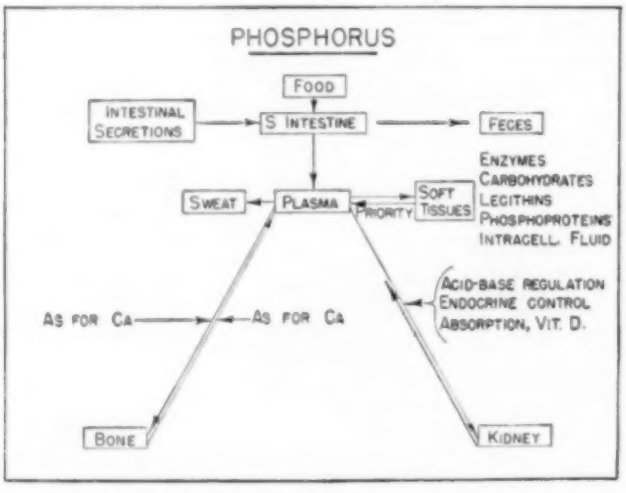


Fig. 2.—Schematic representation of the metabolism of phosphorus.

McCance and Widdowson [13] have observed that in adults who are not retaining calcium, the urinary calcium increases with increase in calcium absorption; in children, such rise in urinary calcium does not often occur, for increased calcium absorption results rather in increased retention.[12]

Ordinarily, the amount of calcium excreted in sweat is very small and is usually disregarded in a study of calcium retention.

To summarize, in the normal person, the factors which appear most important in regulating the ability of the body to absorb and retain calcium are the maintenance of a normal gastric acidity; the maintenance of an adequate supply of vitamin D, either by ingestion or by manufacture within the body; the maintenance of a calcium intake sufficiently large to allow for both the inevitable loss of calcium through its precipitation as insoluble salts in the intestine, and the urinary calcium excretion peculiar to the individual subject. It is not surprising, from the foregoing material, that the requirement for calcium may vary rather widely from person to person and even in the same person at different times.

12. Knapp, E. L.: Factors Influencing the Excretion of Calcium in Normal Persons, J. Clin. Investigation **26**: 182 (March) 1947.

13. McCance, R. A., and Widdowson, E. M.: Significance of Urinary Calcium, Phosphorus and Magnesium, J. Physiol. **101**: 350 (Nov.) 1942.

PHOSPHORUS

The intermediary metabolism of phosphorus is indicated schematically in figure 2. In many respects the metabolism of phosphorus follows that of calcium; however, more of the body phosphorus, between 10 and 20 per cent, is found in tissues other than bone, and the phosphorus of soft tissues seems to have metabolic priority over that of bone.

The intake of phosphorus usually exceeds that of calcium, except in infants and small children whose diet is predominantly milk. A far greater percentage of intake is absorbed than is true for calcium, and the fecal excretion is a correspondingly smaller percentage of intake.

All body phosphorus exists as orthophosphate, either in organic or inorganic combination. In the blood stream, inorganic phosphate is carried in plasma, lecithin in both plasma and cells and phosphate esters (acid-soluble phosphorus) almost entirely in the cells, less than 1 mg. per 100 ml. (as phosphorus) being found in plasma.

Deposition and release of bone phosphate are under the same regulatory mechanisms as those for calcium. In fact, much of the recent knowledge concerning mineral metabolism of bone has been achieved through the use of radioactive isotopes of phosphorus.[14] The phosphorus of soft tissues exists as both organic and inorganic phosphate and plays a highly important part in many body processes. This phase of phosphorus metabolism has been recently reviewed.[15] Phosphorylation appears to be an essential step for the absorption of many nutrients, as fatty acids and hexoses. The phosphate radical is bound to proteins, fatty acids, carbohydrates and enzymes. High energy phosphate bonds permit gradual release of energy during the oxidation of glycogen in muscle. The phosphate ion is the chief inorganic anion of intracellular fluids. Phosphates of extracellular fluids are useful in the regulation of the acid-base balance of the body, for the excretion of acid phosphate in urine is one of the means of maintaining acid-base balance in the body, although the relationship may not be as direct as it has been considered to be.[16]

The effect of vitamin D on the intermediary phosphorus metabolism differs somewhat from its effect on the metabolism of calcium; whereas vitamin D increases the absorption of calcium from the intestine, its effect on the absorption of phosphorus is negligible.[2] Administration of vitamin D appears, however, to hasten the transfer of organic phosphate of the soft tissues to inorganic phosphate available for deposition in bone.[17] Vitamin D increases the rate of reabsorption of phosphorus from the renal tubules,[18] which may explain its effect on the serum phosphate and on calcification in rickets.

Parathyroid hormone administered to normal animals tends to increase the urinary excretion of phosphorus

14. Greenberg,[7] Manly and Bale,[9c] Hevesy.[9e]

15. Kalckar, H. M.: The Chemistry and Metabolism of the Compounds of Phosphorus, Ann. Rev. Biochem. **14**: 283, 1945.

16. Pitts, R. F., and Alexander, R. S.: The Renal Reabsorptive Mechanism for Inorganic Phosphorus in Normal and Acidotic Dogs, Am. J. Physiol. **142**: 648, 1944.

17. Cohn, E. W., and Greenberg, D. M.: Studies in Mineral Metabolism, with the Aid of Artificial Radioactive Isotopes: I. Absorption, Distribution and Excretion of Phosphorus, J. Biol. Chem. **123**: 185 (March) 1938.

18. Harrison, H. E., and Harrison, H. C.: The Renal Excretion of Inorganic Phosphate in Relation to the Action of Vitamin D and Parathyroid Hormone, J. Clin. Investigation **20**: 47, 1941.

somewhat earlier than that of calcium.[19] Some observers have felt that a decrease in tubule reabsorption of phosphate was the chief effect of parathyroid hormone. These conclusions have recently been challenged,[20] and the chief effect of the parathyroid hormone on the kidney is considered to be an increase in reabsorption of calcium with no alteration in rate of reabsorption of phosphorus.

MAGNESIUM

The metabolism of magnesium has been studied far less thoroughly than that of calcium or phosphorus, partly because chemical methods for its determination have been less satisfactory. Magnesium occurs in meats, cereals, other plant foods and milk. Magnesium salts are similar to those of calcium in solubility; probably the same factors govern the absorption of both.[21]

In general, the intermediary metabolism of magnesium resembles that of phosphorus in that magnesium is a component of soft tissues as well as of bone. Potassium and magnesium are the cations of intracellular fluid. Magnesium is a component of certain organic complexes, notably those containing members of the B group vitamins, and appears to catalyze certain enzyme reactions, as phosphatase.

The factors regulating the deposition of magnesium in bone and its withdrawal have been most thoroughly studied by Duckworth and Godden.[22] According to these investigators the skeletal magnesium is highly labile and forms a reserve easily drawn on by soft tissues, which appear to have priority. The return of magnesium to bone after depletion is a slower process than its removal.[21] Deficiency of magnesium disturbs calcium metabolism; in calcium deficiency, when magnesium is available, magnesium can replace calcium of bone to a limited extent. Although the amount of magnesium in blood plasma is normally small, 1 to 3 mg. per 100 ml., magnesium tetany has been observed in young animals and is reported to have occurred in a child.[23]

DAILY REQUIREMENT OF CALCIUM, PHOSPHORUS AND MAGNESIUM

General.—From the foregoing discussion, it will be evident that the minimum requirement of any of these less soluble elements will depend in considerable degree on the state of health of the person, particularly on his efficiency of absorption. It appears almost axiomatic that, if the dietary regimen is adequate in all respects and the subject is in excellent health, the efficiency of absorption will be maximum; if the diet is incomplete in one or more essentials, the efficiency of the gastrointestinal tract will be lessened and a larger percentage of these minerals may be unabsorbed.

Illness, particularly febrile illness, is accompanied with decrease in gastric acidity and a decreased absorption of calcium [24] and probably, also, of magnesium and phosphorus. Return to normal efficiency of the gastrointestinal tract may be slow; low grade chronic upper respiratory infections or recurrent colds definitely decrease the absorption of calcium in infants and small children for periods of weeks or months.[24b] Allowance for such periods often must be made in setting daily requirements for any given dietary essential.

Calcium.—As factors affecting the utilization of one of the three elements discussed tend to affect the utilization of all, and as the requirement of calcium has been more fully studied than those of phosphorus and magnesium, the major part of this discussion is necessarily devoted to calcium requirement.

Several excellent reviews of calcium metabolism with particular reference to requirement have been published.[25] There seems no further need for detailed discussion of various reported studies of calcium metabolism or for elaboration on the separate conclusions of the various reviewers.

It is generally agreed by all investigators that the calcium requirement during growth must be based on skeletal need, as 99 per cent of body calcium is in the skeleton. Estimation of skeletal need is based on the calcium content of the adult skeleton divided according to the proportionate rate of growth during each year of the growth period. Differences of opinion have arisen over whether the actual calcium content of the two adult skeletons analyzed should be considered as the standard for calcium content despite complete lack of nutritional history and the well known prevalence of some degree of osteoporosis in adults. Estimations of quantity of calcium theoretically contained in a completely mineralized skeleton have varied from 1,000 to 2,000 Gm. The daily retention considered as needed at any age during growth will vary considerably depending on the total accepted as standard.

Sufficient data on actual retention of calcium at various ages have now been published to establish the fact that the calcium retention from a given intake tends to vary with the rate of growth common for the age of the child. Thus the correctness of the principle involved may be considered as established. Strangely, the quantity of retention from a given intake appears to vary with growth in weight rather than growth in height of the child.[25b] Actual retention of calcium by healthy normal children given ample amounts of this element usually is well above the minimal amount calculated as necessary for the age. Thus either the well fed child maintains a better mineralized skeleton than necessary to provide an adult skeleton of calcium content similar to the skeletons analyzed or the withdrawals of calcium from the skeleton are sufficiently numerous and severe that allowance for such withdrawal should be made in setting the requirement. It seems probable that both factors are involved.

During those periods of life in which milk is the chief food, the intake and relative proportions of calcium, phosphorus and magnesium in the diet are assumed adequate. Human milk provides for good growth and development of the full term infant. The calcium and phosphorus of human milk average 320 and 130 mg. per liter, compared with 1,180 and 930 mg., respectively, for calcium and phosphorus of cow's milk.[27] The ratio

19. Harrison and Harrison.[18] Tweedy, W. R., and Campbell, W. W.: The Effect of Parathyroid Extract Upon the Distribution, Retention, and Excretion of Labeled Phosphorus, J. Biol. Chem. **154**: 339, 1944.

20. Jahan, I., and Pitts, R. F.: Am. J. Physiol. **155**: 42 (Oct.) 1948.

21. Duckworth, J., and Warnock, G. W.: The Magnesium Requirements of Man in Relation to Calcium Requirements, with Observations on the Adequacy of Diets in Common Use, Nutrition Abstr. & Rev. **13**: 167, 1942-1943.

22. (*a*) Hevesy.[9e] (*b*) Duckworth, J., and Godden, W.: Replenishment of Depleted Skeletal Reserves of Magnesium, Biochem. J. **37**: 595, 1943.

23. Miller, J. F.: Tetany Due to Deficiency in Magnesium: Occurrence in a Child of Six Years, with Associated Osteochondritis of Capital Epiphysis of Femur (Legg-Perthes Disease), Am. J. Dis. Child. **67**: 117 (Feb.) 1944.

24. (*a*) Malmgren, N.: Ueber Den Stoffwechsel des Gesunden Natürlich Ernährten Säuglings und dessen Beeinflussung durch parenteral Infektion und Intoxication, Acta. paediat. **2**: 209, 1923. (*b*) Stearns, G.: Unpublished data.

25. (*a*) Leitch, I.: The Determination of the Calcium Requirements of Man Nutrition Abstr. & Rev. **6**: 553 (Jan.) 1937. (*b*) Holmes, J. O.: The Requirement of Calcium During Growth, Nutrition Abstr. & Rev. **14**: 597 (April) 1945, fig. 3. (*c*) Macy, I. G.: Nutriiton and Chemical Growth in Childhood: I. Evaluation, Springfield, Ill., Charles C Thomas, Publisher, 1942. (*d*) Shohl, A. T.: Mineral Metabolism, Am. Chem. Soc. Monograph Series, New York, Rheinhold Publishing Company, 1939. (*e*) Mitchell, H. H., and Curzon, E. G.: The Dietary Requirement of Calcium and Its Significance, Paris, Hermann et Cie, 1939.

26. Deleted in proof.

27. Jeans, P. C., and Marriott, W. McK.: Infant Nutrition, ed. 4, St. Louis, C. V. Mosby & Company, 1947, p. 158.

of calcium to phosphorus in human milk is close to that in bone; the low protein content of human milk provides for a relatively slow increment of body tissue, so that the phosphorus intake is adequate. Only traces of phosphorus may be excreted in the urine of these infants, demonstrating that the margin of adequacy of phosphorus intake is narrow. The absorption of both calcium and phosphorus is excellent—50 to 70 per cent of the calcium and over 90 per cent of the phosphorus are absorbed; urinary excretion of calcium is small, usually less than 10 mg. daily. The total amount of mineral absorbed daily is insufficient, however, to maintain the mineral content of the rapidly growing skeleton at its birth percentage.[28] Many investigators, therefore, consider that the bones at birth contain an added store of mineral to permit the rapid growth of early infancy with the low ingestion of these minerals. The fact that the long bones at birth are almost completely filled with cancellous bone, and the marrow cavity does not become well developed until later, lends support to this storage theory.[29] Certainly a breast-fed infant, especially if given added vitamin D, maintains good growth and development and avoids rickets even though the bones do become somewhat less well mineralized.

The prematurely born infant, who has missed the storage of calcium that normally occurs during the last four to eight weeks of gestation, and who, in addition, has a very small gastric capacity, will fare less well on human milk than his full term brother. He may not be able to absorb and retain sufficient mineral to prevent rickets simply because sufficient mineral cannot be ingested from human milk.[30] Many clinicians add powdered skimmed milk to the human milk fed such an infant, thus increasing protein and mineral intake. Other premature infants have been satisfactorily fed with low fat cow's milk mixtures. Vitamin D is necessary for the premature, as for the full term, infant.

Infants fed cow's milk without added vitamin D absorb on the average only about 10 per cent of the calcium. Absorption is also most variable, and the same infant may show excessively high retention at one time and heavy loss from the body at another, with no apparent cause for the shift. The addition of vitamin D increases the mean absorption and maintains it at a more consistent level.[31] This increase in absorption apparently is at a decreasing rate with increasing intake of vitamin D. Increase in the vitamin D intake to approximately 350 I. U. daily results in an increase in absorption to 35 to 40 per cent of the intake; further increase in vitamin D results in no greater percentage absorption.

Childhood.—After the child reaches the age of walking, introduction of other foods in the diet increases to the point where the ratio of calcium to phosphorus in the diet is significantly altered. Foods other than milk generally contain far more magnesium and phosphorus than calcium. This change tends to increase the absorption of phosphorus at the expense of calcium absorption. The question of how much milk is desirable in the day's diet becomes important.

The rate of growth in height slows during the preschool years, and the relative proportion of body weight due to skeletal muscle increases.[32] The mineral needed daily for bone is less at this period than at any other time during growth and that for soft tissue proportionately high. The requirement for magnesium and phosphorus will be relatively less diminished than the calcium requirement.

Even with added vitamin D the efficiency of absorption of calcium, magnesium and phosphorus is apt to decrease during this period. The addition of other foods, with increase in undigestible material, and the decreased intake ratio of calcium to phosphorus both tend to decrease absorption. In addition, and more important, the number of febrile illnesses with their concomitant decrease in absorption increases sharply as the child is exposed to a wider circle of playmates. For these reasons, it is generally considered safer to allow an intake of 1 Gm. of calcium daily,[33] even though a well child receiving vitamin D and a nutritionally adequate diet will retain sufficient calcium from 1 pint (500 cc.) of milk daily or a total intake of 0.7 to 0.8 Gm. of calcium. The additional milk provides protein, which is much needed by this age group and likely to be in short supply otherwise. An intake of 1 Gm. of calcium daily from milk together with an otherwise adequate diet allows ample intake of magnesium and phosphorus.

Children of school age also thrive and can maintain calcium retention adequate for growth and bone mineralization when given an adequate diet containing 1 Gm. of calcium daily.[34] Growth at this period is steady and not excessively rapid. The child's immunity to infection increases, resulting in fewer periods of decreased mineral absorption due to febrile illness. Vitamin D is an essential, however, as it is for the younger children,[34b] and for good utilization the diet must be fully adequate in all respects.

As the child approaches puberty he enters a period of nutritional stress. Physical changes occur; hormones are secreted in amounts which vary widely from day to day. Emotional changes are rapid and extreme and affect the production of digestive secretions; vagaries of food likes and dislikes, times of eating, amount of sleep and amount of physical exertion all vary widely and unpredictably. It is not surprising that nutritional failure may and often does occur during this period.

Insufficient studies of nutritional requirements of young adolescents have been published. Such studies, published and unpublished, as are available to me leave the impression that, even when vitamin D is also ingested, the utilization of calcium by children 11 to 15 years of age is more variable than at any other period, with the possible exception of infancy. Many such children given an excellent diet show little or no retention of calcium for several weeks after the establishment of the regimen.[32] Johnston[35] observed that girls of this age group showed a sharp decrease in calcium retention at or near the menarche. Calcium retention could be increased by increasing the amount of vitamin D ingested, but was satisfactory only when 3,000 I. U. or more were ingested daily. In our own laboratory similarly poor retention of calcium (from 10 to 150 mg. daily) was observed in both boys and girls, 11 to 14

28. Stearns, G.: The Mineral Metabolism of Normal Infants, Physiol. Rev. **19**: 415 (July) 1939.

29. Eliot, M. M., and Park, E. A.: Rickets, in Brennemann: A System of Pediatrics, Hagerstown, Md., W. F. Prior Company, Inc., 1948, vol. 1, chap. 36, p. 9.

30. Stearns.[28] Benjamin, H. R.; Gordon, H. H., and Marples, E.: Calcium and Phosphorus Requirements of Premature Infants, Am. J. Dis. Child. **65**: 412 (March) 1943.

31. Stearns, G., and Jeans, P. C.: To be published.

32. Stearns, G.: To be published.

33. Recommended Dietary Allowances, revised 1948, National Research Council Reprint and Circular Series, no. 129, October 1948.

34. (*a*) Macy, I. G.: Nutrition and Chemical Growth in Childhood: II. Chemical Data, Springfield, Ill., Charles C Thomas, 1946. (*b*) Jeans, P. C., and Stearns, G.: Unpublished data.

35. Johnston, J. A.: Factors Influencing the Retention of Nitrogen and Calcium in the Period of Growth: IV. Effect of Estrogens, Am. J. Dis. Child. **62**: 708, 1941.

years old, whose nutrition had been somewhat substandard for several years, though the children were within normal range for both weight and height. Alternate increases of milk and vitamin D permitted adequate retention only when 2 quarts (2,000 cc.) of milk and 700 or 800 I. U. of vitamin D were ingested daily. The children by this time had been under investigation 5 months. In a second study similar subjects were given 1 quart (1,000 cc.) of milk and 400 I. U. of vitamin D daily together with a diet adequate in all known essentials. The retention of calcium and phosphorus, low at first, increased steadily to a maximum which was achieved in about five or six months. Maximum retention was in some cases as high as 800 mg. daily. A third group of children who had been well fed for several years at least, prior to this study, showed ample retention of calcium (400 to 500 mg. daily) at all times when receiving a good diet containing 1 quart of milk and 400 I. U. of vitamin D daily. These experiments tend to reemphasize that chronic substandard nutrition is compatible for a time with maintenance of average growth in weight and height and that recovery from such substandard nutrition is not a matter of days but of months. The finding that well nourished children, 11 to 14 years old, given a good diet retained larger quantities of calcium than did a poorly nourished group corroborates the finding reported by Breiter and her co-workers[36] that the largest calcium retention values were shown by subjects whose diets had previously been ample. These data raise considerable doubt as to the validity of the common assumption that very high retention values always indicate previous depletion and that children well nourished with respect to calcium will tend to have a lower retention of this element than ill nourished children with the same intake. It seems that the most important factor in determining the utilization of minerals by young adolescents is the maintenance of a good nutritional state for several years preceding puberty.

The National Research Council allowances for calcium are increased at 13 years of age from 1 Gm. to 1.4 Gm. of calcium daily for boys and 1.3 Gm. for girls.[33] Actual studies of calcium retention[25b] show that periods of greatest retention probably do not coincide with periods of greatest growth in adolescence but may precede the rapid growth by two years or more. In the majority of children, the prepuberal growth spurt occurs before the child reaches 13 years. Thus, if adequate storage is provided for this rapid growth, it would seem wise to provide an increased intake of calcium and phosphorus earlier than National Research Council recommendations, even by 8 to 10 years of age. Such provision would permit filling of storage depots before the period of most rapid skeletal growth and insure, through ingestion of an ample diet, better utilization of minerals during the period of rapid growth.

The ingestion of 1 quart of milk daily plus a diet otherwise adequate will provide 1.3 to 1.6 Gm. of calcium. Such quantities should provide ample amounts for the well nourished preadolescent and the adolescent child. The boy or girl whose growth is unusually rapid could benefit, or would certainly suffer no harm, from an additional amount of milk. The ingestion of a moderate amount of vitamin D seems a necessary safeguard for this age group.

It must be stressed that recovery from poor nutrition is not complete within a few weeks. Particularly in the adolescent group, recovery from mineral undernutrition is slow and achievement of good absorption may occur only after many months of good dietary regimen. Complete mineralization of the skeleton may take years after growth is completed. In the report of the first White House Conference on Child Health and Protection, Todd[37] wrote of "the physiological osteoporosis of adolescence." Although osteoporosis was the common observation in this age group then, and probably is now, it is not known whether such depletion is unavoidable or represents inadequate nutrition preceding and during the period of rapid growth. Sherman[38] has shown that such skeletal depletion can occur in rats during growth and that, in such animals, achievement of a completely mineralized skeleton may be delayed until middle age, if the intake of mineral is maintained at a low level.

Because of these observations, it seems unsafe to consider that as soon as growth in height is complete mineral requirements will drop to the adult or maintenance level. Until more accurate knowledge is at hand, it seems wiser to continue the high intake of bone minerals through late adolescence and early adult life.

Pregnancy and Lactation.—Pregnancy and lactation are periods of added stress for the young woman. The effect of adverse nutrition on the developing embryo makes it especially important that the young woman maintain fully adequate nutrition before becoming pregnant. Such nutrition would insure her own skeleton being fully mineralized when pregnancy occurs. Little mineral is used by the fetus until the last trimester of pregnancy. During this period approximately 25 Gm. are deposited in the baby's body, or roughly 0.3 Gm. daily during the last trimester must be stored over and above the mother's own need. Fortunately, during this period, the endocrine balance of the body appears to favor retention despite the marked increase in urine calcium which occurs in late pregnancy.[38] Most women can maintain the needed retention with an intake of 1.5 Gm. of calcium daily if vitamin D is also ingested. If milk is the chief source of calcium and the diet contains ample amounts of fruits and vegetables, the magnesium and phosphorus intake will be ample also.

For some reason as yet not clear, it appears to be more difficult for a lactating woman to maintain the calcium content of her body than for the pregnant woman to do so. Urinary calcium is usually lower in the lactating than in the nonpregnant woman.[39] The calcium excreted in urine plus that of the milk may be no greater than the urinary excretion of calcium during late pregnancy, yet calcium will be lost from the body unless the intake is maintained at a higher level than during pregnancy.[40] For this reason the

36. Breiter, H.; Mills, R.; Dwight, J.; McKey, B.; Armstrong, W., and Outhouse, J.: The Utilization of the Calcium of Milk by Adults, J. Nutrition **21**: 351 (April) 1941.

37. Venar, Y. A., and Todd, T. W.: In White House Conference on Child Health and Protection: II. Anatomy and Physiology, New York, D. Appleton-Century Company, 1932.

38. Sherman, H. C.: Calcium and Phosphorus in Foods and Nutrition, New York, Columbia University Press, 1947.

39. Knapp, E. L.: Studies on Urinary Excretion of Calcium, thesis, State University of Iowa, 1943.

40. Donelson, E.; Nims, B.; Hunscher, H. A., and Macy, I. G.: Metabolism of Women During the Reproductive Cycle, Calcium and Phosphorus Utilization in Late Lactation and During Subsequent Reproductive Rest, J. Biol. Chem. **91**: 675, 1931.

National Research Council allowances have been placed at 2.0 Gm. daily, which seems a reasonable increase.

Periods of lactation exceeding nine months appear to be accompanied with profound metabolic changes resulting in heavy calcium loss. The only reported data on women lactating for a year or more [40] showed that most of the subjects studied excreted excessive amounts of calcium in urine, amounts exceeding 1 Gm. daily (for one subject) and accompanied with marked loss of this mineral from the body. These women were professional donors to a human milk depot. It appears that, in assessing the value of such depots, one must consider the ultimate cost to the women who provide milk by overly long lactation periods.

Adults.—After complete mineralization of the skeleton has been achieved, the adult man and the woman who does not bear children need only sufficient minerals for body maintenance.

Studies of adults [41] show that healthy men and women receiving a diet adequate in all known essentials will be in calcium equilibrium (losses and retention remaining equal over a period of time) when the calcium intake is 10 mg. per kilogram of body weight. Thus, were an adult always in perfect health, an intake of 0.5 to 0.8 Gm. of calcium daily should be adequate, depending on the weight of the person. Steggerda and Mitchell [41b, c] reiterated that an intake of 10 mg. per kilogram of body weight daily represented the mean adult requirement and that increasing the daily intake to 14.51 mg. per kilogram of body weight (1 Gm. daily for a 150 pound [68 Kg.] man) would cover the requirements of 90 per cent of adult men and women of a nutritional status representative of college students and staff. These values can be considered representative of a favored population group ingesting fully adequate diets. They do not take into account the fact that adults also have illness and that worry and mental strain decrease gastrointestinal efficiency. McKay and collaborators [41d] demonstrated that calcium and phosphorus retention of college women was greater for a given intake when a completely adequate diet was given than when the subjects chose their own food. Until the practice of nutrition is far better established than now, so that the requirement for each component of the diet has been studied with diets of widely varying compositions, allowance must continue to be made for the apparently greater requirement of any one essential when the diet is inadequate in other essentials. Thus, the National Research Council allowance of 1 Gm. daily for adults seems moderate. Such an amount of calcium can be maintained by the ingestion of 1 pint of milk daily, together with a serving of milk products as cheese or ice cream and cream used in coffee. Three glasses of milk daily provide an ample intake.

Ohlson and collaborators [42] have studied the calcium metabolism of women from 52 to 74 years old and found the mean requirement for equilibrium was 14.1 mg. per kilogram of body weight, considerably higher than Mitchell's mean findings for vigorous adults.

It has been observed that gastric acidity tends to decrease in old age, so it is not surprising that the absorption of calcium, phosphorus and magnesium is not efficient in older persons. Their requirements, therefore, resemble those of young children. The diet should be adequate in all respects and the food easily assimilable. A gram or more of calcium daily, taken largely from milk, seems highly desirable for the elderly adult. The ingestion of a moderate amount of vitamin D daily would appear as necessary for the sedentary elderly person as for the child, for older persons may not be exposed to sunlight regularly.

Osteoporosis is all too common in middle-aged and older women, somewhat less common but not rare among older men. Whether such osteoporosis is due primarily to atrophy of the bone matrix,[43] to loss of mineral or to both is not yet fully established. Albright [44] has shown that remineralization occurs in osteoporosis during therapy with steroid hormones, which are known to stimulate anabolism. The remineralization was concomitant with increased retention of nitrogen, calcium and phosphorus. Remineralization in osteoporosis has also been observed after diet and other therapy directed toward improving absorption from the gastrointestinal tract.[45] For the purpose of this review the important fact appears to be that gastrointestinal efficiency of many elderly persons is poor and special therapy may be needed to improve absorption of food constituents.

Magnesium.—Little has been added to our knowledge of magnesium requirements since the publication of the excellent review by Duckworth and Warnock.[21] Magnesium is widely distributed among foodstuffs, though the quantity present in any single food is not large. The magnesium content of human milk averages 4 mg. per 100 milliliters and that of cow's milk 12 mg. per 100 milliliters,[25g] roughly one-eighth and one-tenth the calcium content of the two kinds of milk. Meats and cereals contain more magnesium than calcium; vegetables and fruits show variable proportions of the two components.

The effects of magnesium deprivation have been rather fully studied in animals.[46] However, magnesium is so widely distributed in foodstuffs that magnesium deficiency, if it occurs in man, is probably the result of lack of utilization rather than of deficient intake.[23]

Duckworth and Warnock have estimated the magnesium requirement as less than 10 mg. daily during growth. If these estimates are correct, and they are based on sound premises, it would seem difficult to avoid an adequate intake of magnesium. Recorded magnesium intakes of various groups of infants and

41. (*a*) Steggerda, F. R., and Mitchell, H. H.: The Calcium Requirement of Adult Man and the Utilization of the Calcium in Milk and in Calcium Gluconate, J. Nutrition **17**: 253, 1939; (*b*) Further Experiments on the Calcium Requirement of Adult Man and the Utilization of the Calcium in Milk, ibid. **21**: 577 (June) 1941; (*c*) Variability in the Calcium Metabolism and Calcium Requirements of Adult Human Subjects, ibid. **31**: 407 (April) 1946. (*d*) McKay, H.; Patton, M. B.; Ohlson, M. A.; Pittman, M. S.; Leverton, R.; Marsh, A. G.; Stearns, G., and Cox, G.: Calcium, Phosphorus, and Nitrogen Metabolism of Young College Women, J. Nutrition **24**: 367 (Oct.) 1942. McKay, H.; Patton, M. B.; Pittman, M. S.; Stearns, G., and Edelblute, N.: The Effect of Vitamin D on Calcium Retentions, J. Nutrition **26**: 153 (Aug.) 1943.

42. Roberts, P. H.; Kerr, C. H., and Ohlson, M. A.: Nutritional Status of Older Women, J. Dietet. A. **24**: 292 (April) 1948.

43. Albright, F.; Smith, P. H., and Richardson, A. M.: Postmenopausal Osteoporosis, J. A. M. A. **116**: 2465 (May 31) 1941.

44. Albright, F., and Reifenstein, E. C.: The Parathyroid Glands and Metabolic Bone Disease: Selected Studies, Baltimore, Williams & Wilkins Company, 1948.

45. Meulengracht, E.: Osteomalacia of the Spinal Column from Deficient Diet or from Disease of the Digestive Tract: I. From Deficient Diet, Acta med. Scandinav. **101**: 138, 1939; II. Osteomalacia Achylia. ibid. **101**: 157, 1939; III. Osteomalacia e Abuse Laxantium, ibid. **101**: 187, 1939. Stearns, G., and others: Unpublished data.

46. Kruse, H. D.; Orent, E. R., and McCollum, E. V.: Studies on Magnesium Deficiency in Animals: I. Symptomatology Resulting from Magnesium Deprivation, J. Biol. Chem. **96**: 519, 1932. Greenberg.[24]

children [47] showed mean values varying from 100 mg. to 300 mg. daily; corresponding mean retention values varied from 10 to 78 mg. daily, with a median of about 21 mg. As was pointed out by these reviewers, the apparent retention of magnesium by children at all ages studied is much more than the amount estimated as needed. Duckworth and Warnock concluded that excretion in sweat must be far greater than is generally believed; it seems equally possible that loss of magnesium during periods of illness may be far greater than is realized, necessitating greater storage during periods of retention. Duckworth and Godden [22b] have observed that, in animals depleted of magnesium, the magnesium of bone is used to maintain the magnesium content of the soft tissues. Repletion of bone is a much slower process than depletion.

Phosphorus.—Phosphorus is so universal in American foods that an intake deficient in phosphorus must of necessity be deficient in a large number of food essentials. In addition, phosphorus appears to be more efficiently absorbed from the gastrointestinal tract than either calcium or magnesium.

If the dietary requirement for calcium is met from milk the phosphorus intake will be adequate. All protein-rich foods are good sources of phosphorus. During the periods of growth, which include infancy, childhood, pregnancy and lactation, the amount of calcium in the diet should equal or exceed the amount of phosphorus, with a ratio of calcium to phosphorus from 1 to 1.5.[48] In periods of maintenance only, as in adult life, the ratio may be less than 1.

COMMENT

The supply of bone-building minerals during periods of growth is an important factor in determining the eventual stature of a person. Study of dietary habits of various groups tend to show that peoples whose diets provide adequate calories, protein and calcium are tall in stature and those whose diets are poor in these substances tend not only to be short in stature but small framed, with finer bone structure and a thinner bone cortex. If children of such small skeletoned peoples are more liberally fed, significant increase in stature is observed even in one generation. It is not the province of this review to discuss the proper height or skeletal size of the American people, yet to speak of requirement of these substances for any age group presupposes a standard both for final stature and for rate of skeletal growth. The discussion of requirements herein has been based primarily on growth rates of nutritionally favored population groups. The term allowance as used by the National Research Council is probably preferable to the term requirement. Certainly, a considerable part of our own population has lived to maturity, reared children and died without ever achieving such a daily intake as recommended here. It is equally certain that a considerable percentage of our population shows some degree of malnutrition, as judged by present standards. The prevalence of osteoporosis in older persons is often considered evidence of such malnutrition. Whether better dietary habits, including a more ample intake of bone-building minerals, will result in a more vigorous old age remains to be proved. The evidence is strong that better nutrition is one of the chief factors in the increase of stature and of rate of growth of present day Americans over those of fifty years ago. As the mean age of our population increases we are concerned with postponement of senescence. Maintenance of a well mineralized skeleton throughout adult life may well be a factor in the maintenance of physical vigor into old age. Studies of skeletal density and the prevalence of bone diseases in older populations in which dietary habits can be ascertained throughout their adult years would add materially to our knowledge of these matters.

Our present knowledge of the requirements for skeletal minerals can be summarized simply. Ample evidence exists that deficiency of intake or utilization of these minerals results in slowing of growth and lengthening of the growth period; it is possible that such deficiencies in adult life may hasten senescence. On the other hand, there is no evidence of any ill effects from ample intake of these substances over long periods of time; during the growth period increased ingestion of milk, with its high content of bone minerals, has been accompanied with increase in rate of growth and earlier completion of growth. The evidence favors strongly the maintenance of an adequate, even ample, intake of these minerals throughout the entire life span.

47. Shukers, C. F.; Knott, E. M., and Schlutz, F. W.: Magnesium Balance Studies with Infants, J. Nutrition **22**: 53 (July) 1941. Daniels, A. L., and Everson, G. J.: A Study of the Magnesium Needs of Preschool Children, J. Nutrition **11**: 327 (April) 1936. Daniels, A. L.: Magnesium Needs of Preschool Children, Am. J. Dis. Child. **62**: 568, 1941.

48. Stearns, G.: The Significance of the Retention Ratio of Calcium: Phosphorus in Infants and in Children, Am. J. Dis. Child. **42**: 749 (Oct.) 1931.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

The Council has authorized publication of the following report.

R. T. STORMONT, M.D., *Secretary.*

VITAMIN E

More than three years ago stories appeared concerning a remarkable new treatment for patients with circulatory disease. The treatment was said to have been discovered by some investigators in London, Canada. It was alleged that large doses of vitamin E, or alpha tocopherol, could effect remarkable recoveries in patients with a wide variety of cardiovascular disorders who had not been benefited by more orthodox therapy.

That vitamin E should be tried in heart disease is not surprising, since, in 1944, Houchin and Smith [1] reported that rabbits with severe vitamin E deficiency occasionally die suddenly of myocardial failure. Obviously, however, the fact that vitamin E deficiency in rabbits may produce myocardial damage does not necessarily mean that vitamin E will have therapeutic value in human heart disease.

The protagonists of vitamin E therapy have not reported any results derived from critical clinical tests, although medical and lay literature contain reports which, to the uncritical, might appear to lend support to the hypothesis that vitamin E is useful in the treatment of heart disease. The first announcement of the possible effectiveness of alpha tocopherol acetate in coronary heart disease appeared as a letter, signed by A. Vogelsang and E. V. Shute, in *Nature*.[2] Subsequently a series of articles

1. Houchin, O. B., and Smith, P. W.: Cardiac Insufficiency in Vitamin E Deficient Rabbit, Am. J. Physiol. **141**: 242 (April) 1944.

2. Vogelsang, A., and Shute, E. V.: Effect of Vitamin E Deficiency in Coronary Heart Disease, Nature, London **157**: 772 (June 8) 1946.

appeared in the *Medical Record*[3] setting forth the findings of the London, Ontario, investigators. This work did not contain satisfactory data or controls. In many instances the diagnosis was in doubt, other recognized forms of therapy were used concomitantly and control cases were not reported. Subsequent investigations by other workers[4] have failed to substantiate the claims of Shute and his co-workers. These investigations, in contrast to those of the Shutes, were carefully conducted and adequately controlled. In a panel discussion on cardiac therapy at the June 1947 meeting of the American Medical Association, the following statement was made: "Vitamin E is of no value in coronary heart disease, hypertension or rheumatic heart disease." A conference on vitamin E was held under the auspices of the New York Academy of Sciences in April 1949. At this time the Shutes presented their evidence, but a number of papers were also presented by outstanding cardiologists from Cornell and Duke universities which did not substantiate the work of the Shutes.

The Shutes and their co-workers have also reported[5] that varicose ulcers, thrombophlebitis, early gangrene of the extremities, thromboangiitis obliterans and cerebral thrombosis respond to vitamin E therapy. The disease most recently reported by Vogelsang of the Shute Institute to respond to vitamin E therapy is diabetes.[6] Even before this report was published in any scientific journal the Vitamin Corporation of America secured a copy and distributed it to the medical profession as advertising for their brand of vitamin E. This was done without the permission of the New York Academy of Sciences, under whose auspices the paper was presented.

Guest[7] investigated the effects of vitamin E in juvenile diabetes on 13 patients and did not find any beneficial effects. It should be noted that many of Vogelsang's patients were elderly, since recent investigations at Montefiore Hospital in New York have shown that elderly diabetics have a decreased insulin requirement and some may be controlled by diet alone. Juvenile diabetes, notorious for its severity and the difficulty with which it is controlled, provides a much more rigorous test for any therapeutic agent.

More recently, Bensley and his co-workers[8] carried out a controlled study in which 35 patients with diabetes were given vitamin E therapy and the results compared with those seen in a comparable group of 20 diabetic patients to whom a placebo was administered. Careful studies of blood sugar, cholesterol, urea nitrogen, plasma bilirubin, urine urobilinogen and plasma tocopherol did not reveal differences between the groups except for elevation of plasma tocopherol in the vitamin E-treated group. The authors conclude that evidence was lacking to support the view that vitamin E is of value in the treatment of diabetes mellitus.

THE SHUTE FOUNDATION

"The Shute Foundation for Medical Research," which includes a public relations office, was organized by the Doctors Shute under Ontario Letters patent in 1947. In London, Ontario, the organizers purchased an old estate, which was called "The Shute Institute for Clinical and Laboratory Medicine." The Foundation is reported to be supported entirely by voluntary public subscriptions and patients' fees. The Shutes have claimed that they receive a fixed salary which is much less than they formerly earned as private practitioners.

The Institute solicits patients in the same brochure that it uses to solicit funds. Pamphlets and brochures have been distributed accompanied with a form which may be used as a bank check for donating funds. One pamphlet, entitled, "This could save YOU!" states on the cover: "The Shute Institute Therapy for HEART DISEASE—80 per cent improvement revealed in the first 5,000 cases treated. (This proportion of success has remained constant since the first 100 patients.)" Inside this pamphlet this statement appears: "THE DISCOVERER Dr. Evan Shute is not a one-idea Scientist. He will be long remembered for finding vitamin E's answer to phlebitis and thrombosis. He has earned the gratitude of many for his treatment of chronic leg ulcers.

"The future will give wide recognition to his group's work on thrombocytopaenic purpura, the toxaemias of pregnancy, the prevention of premature birth, kidney disease and diabetes.

"But greatest of all is the vitamin E therapy for heart disease."

Recently a booklet entitled, "The Shute Research Program," was issued by the Foundation. This booklet contains such frightening headings as "Destroyer of man in his prime CORONARY HEART DISEASE," "The Neglected Scourge of Childhood RHEUMATIC HEART DISEASE" and "The menace of the middle-aged HIGH BLOOD PRESSURE" and purports to set forth the research program of the Institute. Besides the conditions just mentioned, the program includes vascular disease, nephritis, purpura and polycythemia, peptic ulceration and brain and mental processes. In a section entitled "other research new and continued VASCULAR DISEASE" the following statement is made: "Every time a clot in a leg vessel dissolves after the use of vitamin E this question demands an answer:—'If vitamin E will do that for a leg artery, why not for a coronary vessel?' There is only one answer: 'It will!'" However, the sponsors apparently are not prepared to state categorically that all the answers are available, because the following statement is made concerning peptic ulcers: "Too many peptic ulcers have been restricting diet for years. Too many ulcers heal, recur, heal and recur almost indefinitely. There must be real and lasting relief somewhere. Could it not be in E as the cited studies suggest?" It could be, but all other evidence is to the contrary.

According to the promotion, this Institute holds a unique place for the control of heart disease and other bodily ills if one can judge by the challenging statement: "THE SOLE MEDIUM: It would not be possible for others to carry out this series of important cardiac studies without a delay of nearly three years. The Shute patients (5,000 to 6,000) have already had up to 2½ years of treatment with vitamin E. The Shute Institute in Canada will occupy this position alone for at least another two or three years."

A new periodical, known as *The Seminar*, has appeared as an official organ of the Shute Foundation. Volume 1, no. 1 appeared in September 1949. It contains four articles, all written by the Shutes and their co-workers (two of the articles are reprints from other publications) and three editorials, one consisting of quotations regarding the persecution of famous medical scientists, and another of a discussion of the biologic standardization of vitamin E.

The lay press already has devoted considerable space to the claimed virtues of vitamin E. The many inquiries arriving at the headquarters office of the American Medical Association indicate that this has had some effect. It is regrettable that the hopes of sufferers from heart disease, and other cardiovascular conditions, as well as those of countless diabetic persons, should be falsely raised by unbridled enthusiasm. Those who have truly scientific contributions usually are content to report their findings to critical scientific audiences and to hope for searching analysis by such audiences. Persons who place publicity before facts are doing a disservice to humanity.

3. Vogelsang, A.; Shute, E. V., and Shute, W. E.: Vitamin E in Heart Disease, M. Rec. **160:** 21 (Jan.); 91 (Feb.); 163 (March); 230 (April); 279 (May) 1947. Molotchick, M. B.: Case Histories of Vitamin E Therapy in Heart Disease, M. Rec. **160:** 667 (Nov.) 1947.

4. Makinson, D. H.; Olksky, S., and Stone, R. J.: Vitamin E in Angina Pectoris, Lancet **1:** 102 (Jan. 17) 1948. Levy, H., and Boas, E. P.: Vitamin E in Heart Disease, Ann. Int. Med. **28:** 1117 (June) 1948. Baer, S.; Heine, W. I., and Gelfond, D. B.: The Use of Vitamin E in Heart Disease, Am. J. M. Sc. **215:** 542 (May) 1948.

5. Shute, E. V.; Vogelsang, A. B.; Skelton, F. R., and Shute, W. E.: Influence of Vitamin E on Vascular Disease, Surg., Gynec. & Obst. **86:** 1 (Jan.) 1948.

6. Vogelsang, A.: International Conference on Vitamin E, New York Academy of Sciences, New York City, April 15-16, 1949, to be published. Vogelsang, A.: Cumulative Effect of Alpha Tocopherol on Insulin Requirements in Diabetes Mellitus, M. Rec. **161:** 363 (June-July) 1948. Vogelsang, A.: Effect of Alpha Tocopherol in Diabetes Mellitus, letter to the editor, J. Clin. Endocrinol. **8:** 883 (Oct.) 1944.

7. Guest, G. M.: International Conference on Vitamin E, New York Academy of Sciences, New York City, April 15-16, 1949, to be published.

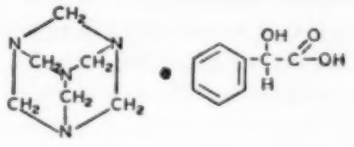
8. Bensley, E. H.; Fowler, A. F.; Creaghan, M. V.; Zabalan, F.; Lax, F.; Berish, H., and McDonald, E. K.: Trial of Vitamin E Therapy in Diabetes Mellitus, Canad. M. A. J. **61:** 260 (Sept.) 1949.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

METHENAMINE MANDELATE. — Mandelamine (NEPERA).—$C_{14}H_{20}N_4O_3$.—M.W. 292.33.—The salt obtained from the reaction of equimolecular amounts of methenamine U. S. P. and mandelic acid N. F. containing 47.96 per cent methenamine and 52.04 per cent mandelic acid by weight.—The structural formula of methenamine mandelate may be represented as follows:



Actions and Uses.—Methenamine mandelate combines the actions of two established urinary antiseptics, methenamine and mandelic acid. The compound has the advantage that it acts to some extent as an acidifying agent so that accessory medication to accomplish this is not ordinarily required as when either methenamine or mandelic acid is administered alone. However, in those infections caused by urea-splitting bacteria, preliminary acidification of the urine over a period of 24 to 36 hours prior to beginning therapy is essential to provide a urinary *p*H satisfactory for effective action of the compound. The combination also has the theoretic advantage that it is effective with smaller amounts of mandelic acid and may thus avoid the nausea and vomiting occasionally attributed to the use of mandelic acid alone.

Methenamine mandelate is useful as an adjunct for the treatment of pyelitis, pyelonephritis, cystitis, prostatitis and infections accompanying a neurogenic bladder. It is effective against the following organisms commonly encountered in urinary tract infections: *Escherichia coli, Staphylococcus aureus, Staphylococcus albus* and certain streptococci; *Aerobacter acrogenes* and *Proteus vulgaris* are usually resistant, but not more so than to other commonly employed antibacterial agents. Comparative studies of the bacteriostatic and bactericidal action of methenamine mandelate indicate that its effectiveness is of approximately the same order as that of the sulfonamide drugs or of streptomycin. It is sometimes effective when drug resistance to other agents occurs with certain otherwise susceptible bacterial strains.

Methenamine mandelate is seldom associated with untoward effects; in therapeutically effective amounts, gastric disturbance is infrequent and other toxic manifestations are relatively rare. It is contraindicated in the presence of renal insufficiency.

Dosage. — Methenamine mandelate is administered orally. Average adult dose: 0.75 Gm. to 1.0 Gm. three times daily. For children: over 5 years of age, 0.5 Gm. three times daily; 1 to 5 years of age, 0.25 Gm. three times daily, and infants less than 1 year of age, 0.25 Gm. twice daily.

Tests and Standards.—

The methenamine and mandelic acid used in the preparation of methenamine mandelate respond to the tests and assays of the U. S. P. and N. F., respectively.

Physical Properties: Methenamine mandelate occurs as a white, crystalline powder, possesing a sour taste and practically no odor. It melts between 127 and 130° C. It is very soluble in water. One Gm. of methenamine mandelate dissolves in approximately 10 ml. of alcohol, 20 ml. of chloroform and 350 ml. of ether. The *p*H of a 1 per cent aqueous solution is 4.2 to 4.4.

Transfer to a 100 ml. volumetric flask about 0.1 Gm. methenamine mandelate, accurately weighed, and dilute to the mark with water. The solution exhibits an ultraviolet absorption maximum at 2576 to 2577 A ($E^{1\%}_{cm.} = 6.65 \pm 0.05$). The sharpness of this maximum requires the measurement to be made with a band of monochromatic light of 16 A or less in width.

Identity Tests: Dissolve about 0.5 Gm. of methenamine mandelate in 10 ml. of water in an Erlenmeyer flask and add 10 ml. of diluted sulfuric acid. Moisten a piece of filter paper with silver ammonium nitrate T. S. While holding the paper in the neck of the flask, heat the solution: the formaldehyde evolved turns the paper brown to black and has a characteristic odor (*methenamine*). Add an excess of sodium hydroxide T. S. to the mixture: ammonia is liberated (*methenamine*).

Dissolve 0.1 Gm. of methenamine mandelate in 2 ml. of water, add 3 ml. of potassium dichromate T. S., followed by 5 ml. of concentrated sulfuric acid: the benzaldehyde evolved has the characteristic almond odor (*mandelic acid*).

Purity Tests: Dissolve 1 Gm. of methenamine mandelate in 10 ml. water and add gradually 0.5 Gm. of sodium carbonate. Evaporate to dryness and incinerate the residue at dull-red heat. Add 20 ml. of diluted nitric acid. Stir gently and filter into a 50 ml. Nessler tube. Make the filtrate up to 50 ml. and add 1 ml. of silver nitrate T. S.: the turbidity is no greater than that produced in a control to which has been added 0.15 ml. of 0.02 *N* hydrochloric acid (*halides*).

Dissolve 0.2 Gm. of methenamine mandelate in 10 ml. of water, and add 5 drops of diluted hydrochloric acid and 5 drops of barium chloride T. S.: no turbidity appears within 1 minute (*sulfates*).

Dissolve 1 Gm. of methenamine mandelate in 10 ml. of water, add 2 ml. of diluted hydrochloric acid and dilute to 25 ml. with water. Use this solution as described in the heavy metals test, *U. S. P. XIII*, p. 657: the heavy metals content is no more than 15 ppm. lead.

Dry about 1 Gm. of methenamine mandelate, accurately weighed, over sulfuric acid for 18 hours: the loss in weight does not exceed 1.5 per cent.

Ignite about 1 Gm. of methenamine mandelate, accurately weighed: the residue does not exceed 0.08 per cent.

Transfer to a 250 ml. Erlenmeyer flask about 1 Gm. of methenamine mandelate, accurately weighed, and add 100 ml. of water and 25 ml. of diluted hydrochloric acid. Reflux the solution gently for 15 minutes, cool, wash the condenser tube with water, transfer the solution to a 250 ml. volumetric flask and dilute to the mark with water.

Prepare a modified Nessler's reagent as follows: dissolve 10 Gm. of mercuric chloride, 30 Gm. of potassium iodide and 5 Gm. of acacia in 200 ml. of water. Filter through cotton. Immediately prior to use mix 20 ml. of this solution with 10 ml. of 15 per cent sodium hydroxide in a 250 ml. Erlenmeyer flask and chill the flask in an ice bath. Pipet a 10 ml. aliquot of the sample solution into the modified Nessler reagent, wash down the neck of the flask with water and allow the solution to stand for at least 1 minute. Wash down the sides of the flask with 10 ml. of acetic acid solution (2 parts glacial acetic acid: 3 parts water), mix quickly, and add 20 ml. of 0.1 *N* iodine solution. Back-titrate the excess iodine with 0.1 *N* sodium thiosulfate using starch T. S. as an indicator. Each ml. of 0.1 *N* iodine is equivalent to 0.00117 Gm. methenamine: the methenamine content is not less than 46 nor more than 50 per cent on the dry basis.

Weigh, accurately, 1 Gm. of methenamine mandelate and transfer it to a 125 ml. flask with 50 ml. of water. Titrate the solution with 0.1 *N* sodium hydroxide using phenolphthalein T. S. as an indicator. Each ml. of 0.1 *N* sodium hydroxide is equivalent to 0.0152 Gm. of mandelic acid: the mandelic acid content is not less than 50 nor more than 54 per cent on the dry basis.

METHENAMINE MANDELATE ENTERIC COATED TABLETS: The methenamine mandelate used in these tablets responds to the tests and standards given in the monograph on Methenamine Mandelate.

With a knife scrape the colored coating from a minimum of 24 tablets. Weigh, and grind the tablets into a fine powder. Accurately weigh the equivalent of 4 tablets and assay for methenamine as described in the monograph on Methenamine Mandelate: the methenamine content is not less than 95 nor more than 105 per cent of the claimed amount.

Accurately weigh the equivalent of 4 tablets and transfer it to a 150 ml. glass-stoppered Erlenmeyer flask. Add 50 ml. of neutralized alcohol and titrate with 0.1 *N* sodium hydroxide using phenolphthalein T. S. as an indicator. At the end-point, add 25 ml. of water; if the pink color disappears, continue the titration to a permanent pink color. Near the end of the titration, shake the flask well between additions of alkali. Each ml. of 0.1 *N* sodium hydroxide is equivalent to 0.0152 Gm. of mandelic acid: the mandelic acid content is not less than 95 nor more than 105 per cent of the claimed amount.

NEPERA CHEMICAL CO., INC., YONKERS, N. Y.

Tablets Mandelamine: 0.25 Gm. enteric coated.

U. S. patent 2,124,321; U. S. trademark 347,322.

AMINOPHYLLINE-U. S. P. (See New and Nonofficial Remedies 1949, p. 322).

The following dosage form has been accepted:

CARLO ERBA, INC., NEW YORK 17.

Solution Aminophylline: 2 cc. ampuls: A solution containing 0.25 mg. of aminophylline in each cc. 10 cc. ampuls: A solution containing 25 mg. of aminophylline in each cc.

MEPERIDINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 31).

The following dosage forms have been accepted:

GEORGE A. BREON & COMPANY, KANSAS CITY 10, MO.

Solution Demerol Hydrochloride: 2 cc. ampuls and 30 cc. vials: A solution containing 50 mg. of meperidine hydrochloride in each cc.

Tablets Demerol Hydrochloride: 50 mg.

Licensed under U. S. patent 2,167,351; U. S. trademark 381,130.

METHAMPHETAMINE HYDROCHLORIDE (See New and Nonofficial Remedies 1949, p. 227).

The following dosage form has been accepted:

THE MALTBIE CHEMICAL COMPANY, NEWARK, N. J.

Elixir Efroxine Hydrochloride: 118.3 cc., 473 cc. and 3.78 liter bottles. An elixir containing 0.66 mg. of methamphetamine hydrochloride in each cc.

Tablets Efroxine Hydrochloride: 5 mg.

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SATURDAY, FEBRUARY 18, 1950

BAL IN THE TREATMENT OF METALLIC POISONING

Biochemical investigations into the mode of action of the arsenical blister gases by Peters, Stocken and Thompson [1] during the last war led to the discovery of the compound 2,3-dimercaptopropanol, which was highly effective in preventing vesication in skin contaminated with arsenical gases, such as lewisite, and also in the treatment of systemic effects resulting from the absorbed arsenic in experimental animals heavily contaminated with lewisite. This substance, which came to be known as British antilewisite or BAL, is active because it is a dithiol and forms a compound with arsenic which is nontoxic and much more stable than the compounds resulting from the action of monothiols. The report of the Council on Pharmacy and Chemistry [2] in 1946 pointed out that arsenic and mercury combine with and block the function of the physiologically essential grouping in the cell, specifically of cellular SH (sulfhydryl) groups. BAL competes with these cell constituents for the heavy metals and in the case of arsenic forms a stable combination, thus permitting the removal of arsenic from the tissues. The excretion of the BAL-arsenic compounds is rapid, so that the body is quickly freed from the toxic agent.

The earliest application of BAL to the treatment of arsenical dermatitis was carried out in 1943 by Longcope and his co-workers.[3] These authors treated 22 patients with arsenical dermatitis by inunction in 1 to 10 per cent ointment of BAL and later by intramuscular injection of 5 to 10 per cent solution in peanut oil containing benzyl benzoate. The results were satisfactory. Eagle and Magnuson [4] treated 55 patients with arensical encephalitis with a mortality of 11 per cent. Fifteen of the patients with relatively mild disease recovered within one to four days. Of the 88 patients with arsenical dermatitis, 75 to 90 per cent recovered in an average of thirteen days. Of 11 patients with postarsenical agranulocytosis, 10 recovered. Forty-four patients with arsenic fever made a complete recovery in two to eight days. The drug, however, had no effect in 3 cases of aplastic anemia. Eagle and Magnuson recommended in cases of arsenical poisoning intramuscular administration of 3 mg. per kilogram of body weight every four hours during the first forty-eight hours for a total of twelve injections, and at least twice daily thereafter until complete recovery. Carleton and his co-workers [5] in England reported on 44 cases of arsenical dermatitis treated with BAL. In 41 of these cases the dermatitis was of the acute exfoliative type. Three cases ended fatally, and in 4 more it was impossible to evaluate the progress. In the remaining 37 cases the mean number of days between the first injection of BAL and healing was 21.5.

Eagle and his associates [6] found that a single intramuscular injection of BAL in the dose of 3.5 mg. per kilogram of body weight, administered as a 10 per cent solution in peanut oil and benzyl benzoate to 6 men exposed to arsenical smoke for six minutes and to controls, was followed by a significant and regular increase in the rate of urinary arsenic excretion. The Carleton group failed to establish any increase in the urinary elimination of arsenic in their cases.

The ability of BAL to protect the brain pyruvate oxidase system from poisoning by compounds of arsenic has been shown by Thompson and Whittaker [7] to hold also for the poisoning produced by compounds of antimony, gold and mercury. The immediate use of BAL in cases of accidental overdosage of an arsenical preparation has been attended with dramatic success.

Longcope and Luetscher [8] in the treatment of 61 patients suffering from acute poisoning by bichloride of mercury proved BAL to be an effective antidote when the treatment was instituted within the first few hours after poisoning had occurred. Only 2 of the 61 patients died. Of the 59 who recovered, improvement occurred in all but 2 with astonishing rapidity. It

1. Peters, R. A.; Stocken, L. A., and Thompson, R. H. S.: British Anti-Lewisite (BAL), Nature **156**: 616 (Nov. 24) 1945.

2. Report of the Council on Pharmacy and Chemistry: "BAL" (British Anti-Lewisite) in the Treatment of Arsenic and Mercury Poisoning, J. A. M. A. **131**: 824 (July 6) 1946.

3. Longcope, W. T.; Luetscher, J. A., Jr.; Wintrobe, M. M., and Jäger, V.: Clinical Uses of 2,3-Dimercaptopropanol (BAL). VII. The Treatment of Arsenical Dermatitis with Preparations of BAL, J. Clin. Investigation **25**: 528 (July) 1946.

4. Eagle, H., and Magnuson, H. J.: The Systemic Treatment of 227 Cases of Arsenic Poisoning (Encephalitis, Dermatitis, Blood Dyscrasias, Jaundice, Fever) with 2,3-Dimercaptopropanol (BAL), Am. J. Syph., Gonor. & Ven. Dis. **30**: 420 (Sept.) 1946.

5. Carleton, A. B.; Peters, R. A., and Thompson, R. H. S.: The Treatment of Arsenical Dermatitis with Dimercaptopropanol (BAL), Quart. J. Med. **17**: 49 (Jan.) 1948.

6. Wexler, J.; Eagle, H.; Tatum, H. J.; Magnuson, H. J., and Watson, E. B.: Clinical Uses of 2,3-Dimercaptopropanol (BAL). II. The Effect of BAL on Excretion of Arsenic in Normal Subjects and After Minimal Exposure to Arsenical Smoke, J. Clin. Investigation **25**: 467 (July) 1946.

7. Thompson, R. H. S., and Whittaker, V. P.: Antidotal Activity of British Anti-Lewisite Against Compounds of Antimony, Gold and Mercury, Biochem. J. **41**: 342, 1947.

8. Longcope, W. T., and Luetscher, J. A., Jr.: The Use of BAL (British Anti-Lewisite) in the Treatment of the Injurious Effects of Arsenic, Mercury and Other Metallic Poisons, Ann. Int. Med. **31**: 545 (Oct.) 1949.

is essential, however, that sufficient BAL be administered at the earliest possible moment. Many patients were given 600 to 750 mg. of BAL during the first twelve hours. The dose was frequently continued in amounts of 150 to 300 mg. a day for several days.

Cohen and co-workers [9] obtained a prompt clinical effect with BAL in 5 patients with acute poisoning due to gold, and Ragan and Boots [10] reported a cure of gold dermatitis in 4 out of 5 patients. Lockie and his associates [11] obtained a "spectacular" recovery with BAL in 1 case of thrombopenic purpura caused by a gold salt and in 1 case of granulocytopenia.

The significant results that have emerged from the studies on the action of BAL are the remarkable curative property in the treatment of poisons caused by certain heavy metals, such as arsenic, mercury, gold and antimony, and, no less important, the advance in the theory that a biochemical lesion in a tissue formed by partial blocking of an enzyme can cause pathologic damage. It is likewise significant that this pathologic change can be proved to be reversible.

MALNUTRITION AND STARVATION

World War II both in the Far East and in Western Europe provided an unparalleled opportunity to study the effects of malnutrition and starvation on large population groups. The most recent report on this subject emanates from the Dutch, British, Canadian and United States public health groups which were responsible for the nutritional rehabilitation of Western Netherlands at the end of the war.[1]

A vast mass of information was collected and analyzed. According to the report the serious deterioration of health in the Western Netherlands began after September 1944. In some portions of that region the official diet was about 400 calories per day. In practice the daily calory intake varied widely, because people sought food from the surrounding countryside and anything edible which could be obtained from any source was added. Furthermore, the ordinary person often consumed the entire weekly ration in two or three days, which resulted in what amounted to an enforced fast for the rest of the week, until the next rations became available.

The first cases of hunger edema began to appear in January 1945. Little relief could be offered patients in the hospital; the physicians and nurses who cared for them were little better off and found it necessary to work night and day without supplementary food.

The effects of malnutrition over a prolonged period of time differed in some respects from those reported in other studies of a similar nature. Rapid and progressive loss of weight was the rule. There were those whose weight decreased to 45 to 56 per cent below normal purely as a result of starvation. Men, as a rule, wasted more than women. The body temperature tended to fall below normal. The psychologic effects consisted principally of apathy and irritability, and these manifestations often increased the difficulties of dealing with civilian authorities during the liberation period, when the attempt to remedy the starvation diet first became possible.

The most important conclusions from the report deal with treatment of advanced starvation. The inadequacy of knowledge in 1945 regarding treatment led to the acceptance of certain assumptions, one of them being the virtue ascribed to predigested foods. Many believed that predigested proteins, either for oral or intravenous administration, would be necessary to save many lives. The actual experience, however, indicated that foods like the protein hydrolysates are seldom essential for the resuscitation of patients even in the last stages of exhaustion from starvation. The digestive power of a seriously starved person is apparently much better than had been anticipated. These studies provided ample evidence that the gastrointestinal tract of starved persons can digest such foods as separated milk and fats better than could have been expected.

Another assumption which the experience in the Western Netherlands contradicted was that hunger edema could be explained on the simple biochemical and physical basis of lowered plasma protein and osmotic pressure. Instead the investigators unanimously concluded that hunger edema was the result of a disordered function of the capillaries, leading to undue permeability.

The experience of the Western Netherlands came close to being one of history's most terrible catastrophes. If the German occupying forces had remained two or three weeks longer, nothing could have saved hundreds of thousands of residents of this area from death by starvation. No one knows exactly how many did die, but it is probable that at least 10,000 lost their lives by starvation, because, as the report points out, "the occupying power failed in its obligation to sustain civilian population that was under its authority."

Should a similar undesired contingency ever rise again, valuable lessons will have been learned. The food stocks in Western Netherlands were exhausted when Allied Forces entered the area, in spite of the fact that several days before actual liberation food in some quantities had been reaching the area by air and road. Delays were caused by sorting, stock piling and allocating supplies, which resulted in enormous numbers of persons going without any food for practically a week. Many were already in a severe nutritional

9. Cohen, A.; Goldman, J., and Dubbs, A. W.: The Treatment of Acute Gold and Arsenic Poisoning: Use of BAL (2,3-Dimercaptopropanol, British Anti-Lewisite), J. A. M. A. **133**: 749 (March 15) 1947.

10. Ragan, C., and Boots, R. H.: The Treatment of Gold Dermatitides: Use of BAL (2,3-Dimercaptopropanol), J. A. M. A. **133**: 752 (March 15) 1947.

11. Lockie, L. M.; Norcross, B. M., and George, C. W.: Treatment of Two Reactions Due to Gold: Response of Thrombopenic Purpura and Granulocytopenia to BAL Therapy, J. A. M. A. **133**: 754 (March 15) 1947.

1. Malnutrition and Starvation in Western Netherlands, (Sept. 1944-July 1945), The Hague, General State Printing Office, 1948, pt. 1.

state, and this constituted an acute danger which should be guarded against in the future. Other administrative problems would also have to be solved. The objective is to provide for a starving person as quickly as possible a diet high in protein content and energy value. With rare exceptions predigested foods, such as protein hydrolysates, are not necessary. Starvation in the Western Netherlands, in contrast to the situation which existed in parts of the Orient at the end of the war, did not seem to be complicated by serious vitamin deficiencies.

Current Comment

INACTIVATION OF MILITARY MEDICAL HOSPITALS

Secretary of Defense Louis Johnson has ordered the inactivation or change in status of eighteen military medical hospitals within the continental United States. It has been estimated that this program will effect a reduction of about 8,000 hospital beds and will alleviate the shortage of physicians by permitting the assignment of approximately four hundred physicians to other locations in the military medical services. This is to be accomplished over a period of five months so that there will be no interference with medical care of patients. It has been reported that an annual savings of about $25,000,000 will be made by this move. Secretary of Defense Johnson's action will aid in enabling services to concentrate their most qualified personnel in the remaining hospitals and, if carried to completion, will aid considerably in alleviating the present shortage of medical personnel in the military services.

"CIRCULATION"

The first issue of *Circulation*, the new official organ of the American Heart Association, appeared in January, 1950. The name "Circulation" was selected by the editorial board to indicate the journal's new scope, which includes the entire circulation and not just the heart. The association, according to the foreword by H. M. Marvin, its president, has advanced beyond the limitations of classic "cardiology" into the over-all study of the whole circulation. The scientific activities will be continued under the guidance of the association's Scientific Council. Included in the new journal will be discussions of newer technics and additional specialties such as roentgenology, public health and preventive medicine, anticoagulants and catheterization of the heart. Articles in the basic sciences relating to the cardiovascular system and papers representing the best type of clinical research as well as those which are mainly "practical" in their application will be given prime consideration. Diseases affecting the circulation are important; and, as the life span of the average person increases, diseases affecting the heart and blood vessels and those affected by circulation will be increasingly important.

ENVIRONMENTAL MEDICINE

The recent introduction of the concept "environmental medicine" reflects broadening of medical attention to include inanimate pathogenic and animate pathogenic agents. In the former groups are many which have entered our environment during the last few decades as by-products of modern industrialization. The medical profession has responded to these new problems by the development of special interests such as industrial medicine, radiation medicine and aviation medicine, and by creation of councils such as the Council on Pharmacy and Chemistry, Council on Foods and Nutrition and Council on Industrial Health. State governments and the federal government have created special divisions such as industrial hygiene sections and food and drug offices. The supplementary and cooperative efforts of these various agencies, which are extremely beneficial to industry, labor and the general public, will be inadequate for coping properly with the rapidly increasing health hazards unless due recognition is given their environmental importance. Foulger [1] some years ago stated that there are so many chemicals used in industry or being introduced every week that all the toxicologic laboratories in the world could not possibly keep up with the information on the ultimate action of those compounds. Even with all available library facilities he could not get complete information on how to prevent sickness in industrial workers. Hazlett [2] estimated that of the working population of 60,000,000 in the United States there are probably 15,000,000 persons working in industries which use potentially hazardous materials and processes. To this number of occupationally exposed persons there must be added the consumers of goods of potential acute or delayed toxicity—some cleaning fluids, detergents, paints, floor waxes, pesticides, weed killers, preservative agents, fluorescent tubes, household remedies and sanitary goods. Another important factor is an environment contaminated by industrial wastes, such as arsenicals, sulfur dioxide, beryllium compounds, fluorine, soot and, possibly, radioactive matter. The Donora, Pa., incident still is fresh in the memories of many. Comparatively little instruction in these environmental causes of disease is provided, and they are not properly appreciated even by many physicians who finished school during the last decade. Because inanimate environmental pathogens may cause many acute and chronic diseases, such as neuritis, encephalitis, psychosis, myocarditis, vascular degeneration and sclerosis, dermatitis, acute and chronic pneumonia, pneumoconiosis, emphysema, arthritis, hepatitis and hepatic atrophy, nephrosis, gastritis, colitis, anemia, leukopenia, polycythemia, leukemia and many types of cancers, they are important in differential diagnosis, prevention and treatment. Thus recognition of environmental diseases should be given a prominent place in graduate and postgraduate programs.

1. Foulger, J. H.: Control of Health in Industry, Indust. Med. **12**: 136, 1943.
2. Hazlett, J. L.: Value of Industrial Hygiene, Am. J. Pub. Health **37**: 1302, 1947.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Feb. 13, 1950.

Increased Funds for Research Urged by Physicians

Larger federal appropriations for support of research in cancer, heart and mental diseases were recommended by nearly a score of physicians who testified February 6 and 7 before a House of Representatives committee conducting hearings on the U. S. Public Health Service budget for 1950-1951. Similar testimony is expected to be presented in March at Senate committee hearings. The following witnesses appeared at the House hearings: Drs. Franklin G. Ebaugh, University of Colorado; S. Spafford Ackerly and William K. Keller, University of Louisville; Melvin Casberg, St. Louis University; Robert A. Moore and Edwin F. Gildea, Washington University; Hudson Hoagland and F. Homburger, Tufts; Eugene Ferris and Maurice Levine, University of Cincinnati; Francis J. Braceland and Benjamin Spock, Mayo Clinic; John Romano, University of Rochester; Irving S. Wright, Cornell University; Paul D. White, Harvard; Stafford L. Warren, University of California at Los Angeles; T. Duckett Jones, Helen Hay Whitney Foundation; Cornelius P. Rhoads, Sloan-Kettering Institute, and Charles Cameron, medical director, American Cancer Society. Among other witnesses were Hugh Payne, executive director of Oklahoma Medical Research Foundation, Eric Johnston and Mrs. Wendell Willkie.

Monopoly Charged to Eli Lilly and Parke, Davis

Filing of a civil action by the Department of Justice against Eli Lilly & Company and Parke, Davis & Company, charging conspiracy to control manufacture and marketing of hard gelatin capsules, was announced in Washington February 9 by Atty. Gen. J. Howard McGrath. The suit will be handled in the Federal Court at Detroit.

"The Department of Justice will continue its program to eliminate the use of patent licensing agreements as a basis for monopolizing or restraining trade and commerce in violation of the antitrust laws," Attorney General McGrath stated. "The activities and practices such as those involved in this case must be condemned not only as violations of the law but also as directly affecting the distribution of material essential to public health."

Herbert A. Bergson, Assistant Attorney General and head of the antitrust division, added: "By joint action Parke, Davis and Lilly have eliminated competition between themselves and have effectively excluded competition from others in the manufacture and sale of hard gelatin capsules. The purpose of this action is to release the market from the defendants' absolute control and make it possible for new competition to assert itself."

Report Made on International Health Projects

A progress report by the World Health Organization, relayed to its regional office at Pan American Sanitary Bureau in Washington, states that 74 health projects are under way or about to be launched under joint auspices of the World Health Organization and the United Nations Children's Emergency Fund. Sixty other proposals are under consideration. Main emphasis is being placed on malaria, tuberculosis, technical training, venereal diseases, maternal and child health, nutrition, environmental sanitation and certain communicable diseases.

Health Councils Will Meet Jointly

For the first time, all five national councils which advise U. S. Public Health Service on allocation of research and fellowship grants will meet jointly in Washington on February 18. They are the National Advisory Health Council, National Advisory Cancer Council, National Advisory Heart Council, National Advisory Mental Health Council and National Advisory Dental Research Council. One of the foremost topics on the agenda is the problem of chronic diseases, which cuts across the domain of all five councils.

Medical Legislation

STATE LEGISLATION

Georgia

Bills Introduced.—H. 115 proposes regulations for the organization and operation of nonprofit **medical service corporations.** H. 932, to amend the law relating to prescribing, administering and **dispensing narcotic drugs,** proposes to add a proviso requiring that every hospital, sanatorium or clinic for alcoholic addicts and drug addicts shall at all times have on duty either a physician or intern and a registered nurse.

Massachusetts

Bills Introduced.—H. 1702 proposes the enactment of a **cash sickness compensation act.** H. 1927 proposes the appointment of a committee to make a study and investigation relative to the advisability of establishing **compulsory mental health programs** in the public schools. H. 2106, H. 2141, S. 482 and S. 483 propose the enactment of a **disability benefits law.** H. 2213 proposes that no **blood banks** shall be established and maintained in the state except by a hospital licensed by the department or by the American Red Cross.

Mississippi

Bill Introduced.—S. 320 proposes the **creation of a bureau of investigation** to assist the sheriffs of the state to secure a more effective administration of the criminal laws, to prevent crime, to procure the speedy apprehension of criminals and to provide a group trained in scientific methods of criminal investigation for the assistance of sheriffs. Among other things, this bureau would provide a laboratory with facilities for the analysis of evidences of crime, including the determination of presence, quantity and character of poison, the character of blood stains, microscopic and other examination of material associated with the commission of crime, examination and analysis of projectiles for ballistic imprints and examination and identification of fingerprints. The laboratory facilities should be under the direction of the toxicologist.

Virginia

Bills Introduced.—H. 172 and S. 115 propose an addition to **the medical practice act** relating to reciprocity between Virginia and the District of Columbia. S. 101 proposes to require every physician **attending a pregnant woman** during gestation to take or cause to be taken a sample of blood of such woman within fifteen days of the first examination and to submit such sample to a state department of health laboratory or a laboratory approved by the department for a serologic test for syphilis. S. 103 proposes the appointment of a State Hospital and Medical Care Council if and when the Congress of the United States adopts legislation providing for the reimbursement of the states by the federal government for a portion of the costs of providing for hospital and medical care through stimulation of voluntary enrolment **in prepayment plans for hospital and medical care.** S. 104 proposes to require every physician making a diagnosis of **cancer** to promptly report the same to the state department of health.

Coming Medical Meetings

Annual Congress on Industrial Health, New York, Roosevelt Hotel, Feb. 20-21. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Allergy, Los Angeles, Hotel Biltmore, March 6-8. Dr. Theodore L. Squier, 208 E. Wisconsin Ave., Milwaukee 2, Secretary.

American Academy of General Practice, St. Louis, Kiel Auditorium, Feb. 20-23. Mr. Mac F. Cahal, 406 W. 34th St., Kansas City, Mo., Executive Secretary.

American Goiter Association, Houston, Texas, March 9-11. Dr. George C. Shivers, 100 E. St. Vrain St., Colorado Springs, Colo., Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, Feb. 28-March 3. Dr. H. Kenneth Scatliff, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, March 13-16. Miss Betty Elmer, 1133 Medical Arts Bldg., Dallas 1, Executive Secretary.

Michigan Postgraduate Clinical Institute, Detroit, Book-Cadillac Hotel, March 8-10. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.

Mid-Atlantic Section, American Urological Association, Hot Springs, Va., The Homestead, March 23-25. Dr. H. N. Dorman, 1025 Connecticut Ave. N. W., Washington 6, D. C.

Missouri State Medical Association, St. Louis, March 26-29. Dr. H. E. Petersen, 634 N. Grand Blvd., St. Louis 3, Secretary.

New Orleans Graduate Medical Assembly, New Orleans, Municipal Auditorium, March 6-9. Dr. Woodard D. Beacham, 1430 Tulane Ave., New Orleans, Secretary.

Southeastern Surgical Congress, Washington, D. C., March 6-9. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta 3, Ga., Secretary.

GOVERNMENT SERVICES

ARMY

SCRUB TYPHUS STUDIES IN MALAYA

The Third Army Medical Research Unit left Washington, D. C., February 3, by air, for Kuala Lumpur, Malaya, to continue studies on scrub typhus and typhoid. Major Robert Traub, chief of the department of parasitology of the Army Medical Department Research and Graduate School, has been named field director for the group; the other members are Capt. Herbert L. Ley and First Lieut. Fred. H. Diercks, both of the department of virus and rickettsial diseases, and First Lieut. Vernon J. Tipton, of the parasitology department. Major Traub and Captain Ley were with the initial Army team which was sent to Malaya two years ago to determine whether scrub typhus could be effectively treated with chloramphenicol. Returning to Malaya with the second team in 1948, Major Traub participated in the studies of chloramphenicol as a preventive against scrub typhus, as did Lieutenant Diercks. Dr. Joseph E. Smadel, chief of the department of virus and rickettsial diseases, who led previous teams, expects to join the group before its return within the next four months.

TUBERCULOSIS ORIENTATION LECTURES

The semiannual Tuberculosis Orientation Lectures given at Fitzsimons General Hospital, Denver, January 24-27 were attended by chiefs of medical service of most Army general and station hospitals in the United States. The lectures provided a thorough orientation in the latest methods of treatment and care of tuberculous patients. Two officers of the U. S. Public Health Service also attended the lectures. Those unable to attend will be given an opportunity to attend the next series of lectures scheduled for June. The course was organized by Col. Carl W. Tempel, chief of the Tuberculosis Division at the hospital.

NAVY

SEA-GOING LABORATORY

The U. S. S. *Whidby*, the Navy's sea-going medical laboratory for the Trust Territory Islands of the Pacific, returned to Pearl Harbor January 24 having completed an eighteen month medical survey in the Palau, Western Caroline, Northern Marshall and Mariana Islands. After a routine overhaul at the Pearl Harbor Navy Yard, the ship will return to the Trust Territory to continue the survey. Members of the ship's organization are Lieut. (jg) Robert Lee Jr. (MC), U. S. N., junior medical officer, Brooklyn; Lieut. Peter E. Gergen, U. S. N., commanding officer, Breckenridge, Minn.; Lieut. (jg) John D. Milburn (MC), U. S. N., senior medical officer, East Hampton, Conn., and Ensign Paul V. Borlang, U. S. N., executive officer, McHenry, N. D.

COURSE FOR RESERVE OFFICERS IN RADIOACTIVE ISOTOPES

The eighth course in Medical Aspects of Special Weapons and Radioactive Isotopes for reserve medical and dental officers of the Navy will be held March 27-31 at the U. S. Naval Medical School, Bethesda, Md. This course is being conducted primarily for the benefit of volunteer reserve medical and dental officers and will present the technics to be employed and the problems likely to be confronted in the field of atomic medicine. The first course was given in February 1948, and to date a combined total of about 1,000 physicians and dentists have attended succeeding classes. Reserve medical and dental officers who desire to attend this course should submit a request for training duty at the earliest practicable date to the commandant of the naval district in which they reside. Facilities available at the Naval Medical School make it necessary to restrict attendance to 200 reserve medical and dental officers.

PERSONAL

Lieut. (jg) Anthony D. Vamvas Jr. (MC, USNR), of Worcester, Mass., has been recalled to active duty at his own request.

Lieut. (jg) Markham J. Anderson (MC), of Rochester, Minn., has been transferred to the regular Navy from an active reserve status.

President Truman has approved the selection for promotion to rear admiral of Capt. Frederick C. Greaves, commanding officer, Naval Hospital, Bethesda, Md., and Capt. John Q. Owsley, commanding officer, Naval Hospital, Great Lakes, Ill.

Lieut. Comdr. James W. Packard Jr. and Lieut. John J. Price Jr., both of the regular Navy Medical Corps, have been nominated for duty under instruction to a residency in orthopedics at the Naval Hospital, Oakland, Calif., and to a residency in orthopedics at the Naval Hospital, Chelsea, Mass., respectively.

Lieut. (jg) John Wardell Frederickson (MC, USNR), Oklahoma City, has been recalled to active duty at his own request.

Lieut. (jg) James S. Reed has been nominated for duty under instruction in medical aspects of radiologic defense at the Rice Institute, Houston, Texas.

SECRETARY OF DEFENSE

EIGHTEEN HOSPITALS INACTIVATED OR CHANGED IN STATUS

Secretary of Defense Louis Johnson has directed the inactivation, or change in status, of eighteen military medical hospitals in continental United States.

Secretary Johnson emphasized that his action marks only the first phase of a study of the total medical services problem within the Department of Defense, which is being made under the direction of Dr. Richard L. Meiling, Director of Medical Services. The changes ordered today, Secretary Johnson said, will not alter the highly competent professional medical services available to military personnel or beneficiaries. Certain of the facilities to be closed are adaptable for the needs of Veterans Administration patients. Therefore he has authorized Dr. Meiling to discuss the entire problem of hospitalization of veterans who are patients in military hospitals with the Veterans Administration and the Bureau of the Budget, and to make arrangements for the care of such patients in accordance with provisions made in the budget for the 1951 Fiscal Year for hospitalization of veterans in military hospitals.

Wherever a change is made under the new order, Secretary Johnson pointed out, there are facilities for the medical care of military personnel and their dependents. This care will be provided by joint utilization of facilities in these areas and by more effective utilization of the facilities which will remain. Secretary Johnson directed that the changes be made as soon

as possible and not later than the end of Fiscal Year 1950. No patients, except for emergency treatment, are to be admitted after Feb. 15, 1950 in the hospitals to be inactivated.

In addition to ordering the inactivation or reduction in status of the eighteen hospitals affected by his memorandum of today, Secretary Johnson announced that, effective today, no changes in bed capacity in any medical facility, nor any reopening activation, establishment or change in type of any medical installation, may be made without prior approval by the Director of Medical Services for the Department of Defense.

The hospitals inactivated or changed in status are:

DEPARTMENT OF THE ARMY

Murphy General Hospital, Waltham, Mass.:
1. The general hospital at Waltham, is to be inactivated and closed.
2. The medical facility at Fort Devens is to have an operating bed allocation of 200 beds.

Valley Forge General Hospital, Phoenixville, Pa., is to be inactivated and closed.

Oliver General Hospital, Augusta, Ga., is to be inactivated and closed.

Camp Gordon, Augusta, Ga., is to have an operating bed allocation of 200 beds to be phased out with the inactivation of this Army installation.

Percy Jones General Hospital, Battle Creek, Mich., is to be inactivated and closed.

Camp Custer, Battle Creek, Mich., is to have an operating bed allocation for a medical facility of 100 beds.

Beaumont General Hospital, Fort Bliss, El Paso, Texas, is to be reduced initially to a bed allocation of 700 beds, and as rapidly as the neuropsychiatric patients can be reallocated, this facility shall be reduced to an operating bed allocation of 500.

Madigan General Hospital, Fort Lewis, Wash., will be reduced to an operating bed allocation of 850 beds initially and shall be further reduced to 500 operating beds as rapidly as the neuropsychiatric patients in this medical facility can be phased out.

Fort Monroe Station Hospital, Fort Monroe, Va., to be reduced to Dispensary status.

(Army Area Hospitals [Station Hospitals] not cited above will, by the beginning of fiscal year 1951, show a reduction of 800 operating bed allocations.)

DEPARTMENT OF THE NAVY

Portsmouth Naval Hospital, Portsmouth, N. H., to be reduced to a bed allocation of 35 beds.

Jacksonville Naval Hospital, Jacksonville, Fla., to be reduced to a bed allocation of 180 beds.

Memphis Naval Hospital, Memphis, Tenn., to be reduced to an operating allocation of 150 beds.

Corpus Christi Naval Hospital, Corpus Christi, Texas, to be reduced to an operating bed allocation of 100 beds.

Mare Island Naval Hospital, Mare Island, Calif.: The medical facility at Naval Shipyard, Mare Island, California, to be allocated an operating bed capacity of 50 beds, incident to the closure of the Mare Island Naval Hospital.

Long Beach Naval Hospital, Long Beach, Calif., to be inactivated and closed.

(Other Naval medical facilities within the continental United States not cited above will by the beginning of fiscal year 1951 show a reduction of 580 operating bed allocations.)

DEPARTMENT OF THE AIR FORCE

Lackland Air Force Hospital, San Antonio, Texas, to be reduced to Dispensary status.

Lowry Air Force Hospital, Denver, Colo., to be reduced to Dispensary status.

PUBLIC HEALTH SERVICE

OFFICERS IN GRADUATE TRAINING

The following officers in the Public Health Service are pursuing graduate training as indicated:

Senior Surgeon George W. Bolin, at the University of Pennsylvania Graduate School of Medicine for an eight month course in surgery.

Senior Surgeon Eddie M. Gordon, at Columbia University for nine months' training in hospital administration.

S. A. Surgeon Joseph Shanapy, at the Woman's Hospital, New York, for an 18 week course in obstetrics and gynecologic pathology.

Senior Surgeon David J. Zaugg, at the University of Chicago for nine months training in hospital administration.

Surgeon William W. Richards, at the Eye, Ear, Nose and Throat Hospital, Washington, D. C., for a 12 month residency in ophthalmology.

S. A. Surgeon Robert C. Rodger, at the Johns Hopkins School of Medicine for a two month graduate course in gynecologic pathology.

S. A. Surgeon Donald Harting, at the Johns Hopkins School of Public Health for 11 months' training in public health and maternal and child health.

Surgeon Mary Walton is assigned to Johns Hopkins University School of Public Health for advanced training in epidemiology and biostatistics.

ENVIRONMENTAL RESEARCH IN CINCINNATI

The Environmental Investigations Branch of the Division of Industrial Hygiene is in the process of moving to Cincinnati, Ohio, where it will be located in the building occupied by the Environmental Health Center of the Public Health Service. All units will have moved by early spring of 1950, after construction of laboratory facilities has been completed. The move is in line with public health service policy to concentrate all environmental research activities in Cincinnati. The Environmental Health Center conducts research on water, sewage and other sanitation problems. Work of the Environmental Investigations Branch was interrupted by the war and not resumed in its entirety because of lack of space. The move to Cincinnati will permit expansion of studies in chemistry, bacteriology, toxicology, dentistry, medicine, dermatology, radiology and engineering, fields in which the need for more research has been accentuated by new and changing industrial processes.

Services to state industrial hygiene units will also be facilitated by the move. More frequent consultative services will be possible, as Cincinnati is more centrally located. The increase in laboratory space will also permit the expansion of laboratory services for the states. Laboratory assignments from the Western States will be handled by the laboratory in Salt Lake City, which was established in 1949. Dr. Lewis J. Cralley is chief of the Environmental Investigations Branch.

PERSONAL

Dr. H. van Zile Hyde has been detailed to the Institute of Inter-American Affairs, where he will be director of the Division of Health and Sanitation. Dr. Hyde has been the assistant chief of the Division of International Health of the Public Health Service. He succeeds Mr. Clarence I. Sterling Jr., former director, who is joining the Massachusetts Department of Public Health.

Dr. Knox E. Miller has retired after 36 years' service with the U. S. Public Health Service. He is now with the Florida State Health Department in Jacksonville.

Drs. Lawrence Greenleigh and Carl F. Essig Jr. have become members of the staff of the National Institute of Mental Health, Bethesda, Md.

MISCELLANEOUS

PHYSICIANS NEEDED IN PANAMA CANAL ZONE

The chief health officer of the Panama Canal Zone reports that the Panama Canal Health Department is urgently in need of physicians. One medical officer is needed in each of the following specialties: surgery, internal medicine, orthopedics, roentgenology, cardiology, tuberculosis, urology and obstetrics and gynecology. The annual salary is $8,000 to $9,250 for these positions. There are also seven vacancies for medical officer, general, two vacancies for medical officer, obstetrics, medical officer, psychiatry, and one vacancy each for medical officer, pediatrics, surgery and anesthesiology. These positions pay $6,750 to $8,000 per annum. There is also one vacancy for medical officer, thoracic surgery, and one for medical officer, obstetrics-gynecology, which pay $9,500 to $10,750 annually. Transportation, including cost of shipping household effects, for the employee's family is paid by the Panama Canal Zone, and leave allowances are liberal. Living conditions in the Panama Canal are pleasant and somewhat cheaper than in the United States. These positions come under civil service. Applicants should write directly to: Chief of Office, Panama Canal, Washington, D. C.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARIZONA

Executive Secretary Appointed.—Mr. Robert Carpenter, Phoenix, for twenty years executive secretary of the county board of Essex County, New Jersey, has been appointed executive secretary of the Arizona State Medical Association. Mr. Carpenter has most recently been office manager of a steel company in Phoenix. The state association plans to extend its public relations program.

ARKANSAS

Pediatric Conference.—A Pediatric Conference will be given by the University of Arkansas School of Medicine on March 15-16. The conference is sponsored by the Arkansas Medical Society and the Maternal and Child Health Division of the state board of health. Guest speakers will be Drs. Joseph Stokes Jr., University of Pennsylvania, Philadelphia, and George Piness, University of Southern California, Los Angeles. Physicians are invited to attend. No fee will be charged.

CALIFORNIA

Honor Former Dean.—Dr. Langley Porter, dean emeritus of the University of California Medical School, San Francisco, was honored recently on the occasion of his eightieth birthday by the staff of the psychiatric clinic named in his honor, members of the medical profession and friends. The clinic, operated by the state department of mental hygiene and staffed by the university's medical school, was opened in 1943 for research, treatment and preventive treatment in psychiatry.

Annual Postgraduate Assembly.—The annual Postgraduate Assembly of the College of Medical Evangelists will be held on the Los Angeles campus of the medical school March 12-14. More than 1,500 physicians are expected to attend, and eighty clinical sessions and lectures will be presented. Among out of state speakers will be Dr. Jonathan Forman, Columbus, Ohio, "What About Vitamins?"; James P. Cooney, Washington, D. C., "Medical Aspects of Radiologic Defense"; Dr. Frank N. Allan, Boston, "Coma, Its Causes and Treatment," and Dr. Carl G. Morlock, Rochester, Minn., "Treatment of Duodenal Ulcer." There will be scientific and commercial exhibits. The postgraduate assembly meets under the auspices of the College of Medical Evangelists and its alumni association. For information address Jerry L. Pettis, 312 North Boyle Avenue, Los Angeles 33.

COLORADO

Annual Midwinter Clinics.—The Colorado State Medical Society's annual Midwinter Clinics will be held in Denver, February 21-24. Morning meetings will take place at various Denver hospitals and afternoon meetings and evening social functions at the Shirley-Savoy Hotel. Afternoon guest speakers are as follows:

Stuart W. Harrington, Rochester, Minn., Diagnosis and Treatment of Carcinoma of the Breast.
Carl P. Huber, Indianapolis, The Rh Factor in Obstetrics.
Herbert S. Gaskill, Indianapolis, Life Situations in Medicine.
Bruce K. Wiseman, Columbus, Ohio, Use of Radioactive Isotopes in the Treatment of Disease.
Frederic E. Mohs, Madison, Wis., Treatment of External Cancer.
John W. Cline, San Francisco, Current Status of the Campaign to Socialize American Medicine.
Clinton W. Lane, St. Louis, Contact Dermatitis.
Douglas N. Buchanan, Chicago, Diagnosis and Treatment of Convulsions.

Round table luncheons will be held daily at the hotel with guest speakers available for a question and answer period. Three mornings of clinics will be given by the guest speakers. On Tuesday evening there will be a joint dinner meeting of the College of Physicians, the Medical Society of the City and County of Denver and all those who have registered in advance for the clinics. The annual dinner dance will be held Thursday evening. Technical exhibits will be shown. The registration fee is $5.

Rheumatic Fever Program.—The recently established Colorado Rheumatic Fever Program will attempt to determine the influence of such factors as economic level, crowding in the home, racial descent and weather conditions on the occurrence and prevalence of the disease. The program is under the direction of Dr. George Maresh Jr., Denver. The sponsors are the Colorado Heart Association, the state department of public health, the state medical society and the University of Colorado department of medicine. The program is financed jointly by the Colorado Health Association and the state department of public health. Headquarters for the program are at West Sixth Avenue and Cherokee Street, Denver.

CONNECTICUT

Seminar for Physicians and Dentists.—A series of five weekly lectures on ailments requiring both medical and dental treatment is being sponsored by the Joint Conference Committee of the Connecticut State Medical Society and the Connecticut State Dental Association. Lectures will be held on Tuesday evenings at 8 p. m. February 28 through March 28 at the New Haven Medical Association office. Tickets for the series are $10. Speakers will be:

Lester W. Burket, M.D., D.D.S., Philadelphia, Oral Manifestations of Blood Dyscrasias.
Malcolm W. Carr, D.D.S., New York, Focal Infections in the Etiology of Disease.
Arthur J. Geiger, M.D., New Haven, Heart Disease and Dentistry.
Charles T. Bingham, M.D., Hartford, Psychosomatics in Medicine and Dentistry.
Hayes Martin, M.D., New York, Diagnosis of Cancer of the Mouth.

GEORGIA

Ophthalmology and Otolaryngology Meeting.—The Georgia Society of Ophthalmology and Otolaryngology will hold its annual meeting at the General Oglethorpe Hotel in Savannah March 3-4. The registration fee for the lectures is $20. The lecturers and their subjects are:

Bafard T. Horton, Rochester, Minn., Treatment of the Dizzy Patient and Headaches.
John M. Converse, New York, Treatment of Acute Maxillofacial Trauma and Rhinoplasty.
Mercer G. Lynch, New Orleans, Carcinoma of the Larynx and Methods of Approach Including Lynch Suspension and Radical External Sinus Operations.
Meyer Wiener, Coronado, Calif., Medical Ophthalmology and Surgical Ophthalmology.
Milton L. Berliner, New York, Slit Lamp Microscopy.
Dr. Wendell L. Hughes, Hempstead, N. Y., Lid Reconstruction and Personal Procedures in Ophthalmology.

ILLINOIS

Lack of Funds Curtails Premature Infant Care.—Revisions in the state's program for care of premature infants have been necessitated by a shortage of funds. The revised program provides that only infants weighing 4 pounds (1,814 Gm.) or less at birth will have their hospital care expenses guaranteed by the state health department, and then only if application for aid is submitted within twenty four hours after birth. Previously the state provided for hospital care of all infants weighing 5½ pounds (2,494 Gm.) or less at birth if parents were unable to meet the costs. However, special ambulance service and pediatric care and consultation services, which the state health department provides, will not be curtailed. A study recently completed by the department indicates that the lives of 464 children have been saved annually by the program, which began in 1933. Centers are located in St. John's Hospital, Springfield; St. Francis Hospital, Peoria, and the Christian Welfare Hospital, East St. Louis. Eight hundred and fourteen premature infants were cared for in these centers during 1949, and of these 94 per cent received state aid in meeting hospital expenses. The average bill for hospital care alone in one of these cases is $400.

Chicago

High School Sororities Aid Cancer Research.—The University of Chicago received $37,000 from the Nathan Goldblatt Society for Cancer Research on January 18. The grant included $2,000 from Kappa Alpha Pi and Chi Beta Phi, high school sororities.

Honor Medical Faculty Veterans.—Forty-three doctors who have served on the staff of Northwestern University Medical School for more than a quarter of a century were special guests at the annual ball of the Women's Faculty Club of the school at the Blackstone Hotel, February 4. Of the 600 doctors on the medical school staff the club reports that 450 serve with no remuneration in classrooms, medical and school clinics and hospitals affiliated with the university. Those who have served for at least 25 years were honored.

The Hektoen Institute.—According to the annual report of Dr. Hans Popper, scientific director of the Hektoen Institute, the most hopeful aspect of the institute's development is the progressing integration of its research with the activities of the Cook County Hospital. The research work of the institute has become an integral part of the routine service of the hospital, and many investigations have been carried out by the staff of the hospital in the wards. As the second most

promising note the report lists the increasing number of publications no longer financially dependent on commercial grants from pharmaceutical houses. The third development is that young scientists who want to stay in academic medicine are now working as fellows above the resident level in the institute mainly for graduate degrees.

Studies on renal diseases were continued during 1949, covering not only the disturbed function and management of lower nephron nephrosis but also the disturbance of renal function especially in diabetes and congestive failure. Much work was devoted to the study of hepatic diseases. The studies on antibiotics have been widely expanded. They included especially chloramphenicol, neomycin, enniatin and penicillin O. Radioisotope studies are now extended into study of bone, thyroid and liver diseases as well as hematologic disorders. Studies on congenital heart diseases received a great impetus by the cooperative teamwork between the departments of pediatrics, surgery and pathology and the institute itself. During the year several histochemical, virologic and parasitologic projects were started.

As a result of the 1949 investigations, 85 articles covering the research work of the institute have appeared, are in press or have been submitted for publication, Dr. Samuel J. Hoffman, administrative director, reports. An exhibit on "Congenital Heart Diseases" was awarded the gold medal of the Illinois Medical Society and first prize at the American Academy of Pediatrics meeting in San Francisco.

An "Association for the Study of Liver Diseases" has been organized as an outgrowth of annual meetings on the subject, which have been held twice at the Hektoen Institute and were attended by prominent investigators from the United States and Europe. Headquarters of the society will be at the institute. The physical plant of the present building is inadequate. Laboratories for research in tuberculosis, radioisotopes and the physiology and diagnosis of congenital and other heart disturbances are being completed. The Hektoen Institute has 45 technicians on its payroll as compared to 24 in 1948, in addition to a large number of voluntary fellows who are graduate physicians working without pay. Even though expenditures have increased, the financial status of the institute has improved.

KANSAS

Wichita Research Foundation.—Fifty Wichita doctors were instrumental in the organization of the Wichita Foundation for Medical Research, a nonprofit institution recently founded to further scientific medical investigations. Membership is open to physicians in Sedgwick County and all who hold degrees in the basic sciences. Among the officers are Dr. Donald P. Trees, president; Dr. Ernest W. Crow, secretary; Dr. Lloyd P. Warren Jr., corresponding secretary; Dr. Gerhart R. Tonn, treasurer; Dr. James S. Hibbard, chairman of the board of governors, and Drs. Philip Cooper and Charles K. Wier, board members.

MAINE

Research on Taste Physiology.—The Round Table Foundation Laboratory of Experimental Electrobiology of Camden, Maine, announces a grant of $5,000 by the General Foods Corporation for research on taste physiology. Studies will be carried on to apply a new method of measuring taste and palatability that has been developed at the laboratory.

MASSACHUSETTS

Harvard's New Laboratory.—Harvard University has announced the establishment of a new laboratory to make fundamental studies on the constituents of body fluids and tissues and to extend the research on the physical chemistry of proteins and other biologic substances characteristic of all living matter. The new laboratory, under the direction of Dr. Edwin J. Cohn, will be called the University Laboratory of Physical Chemistry Related to Medicine and Public Health. It is charged with working on the frontiers of knowledge and in such a way as to cross the conventional boundaries of the specialties. Although independent of all schools and departments, it will be free to continue cooperation with groups within the university and elsewhere. Since the beginning of World War II, Dr. Cohn and his group have worked in collaboration with industrial laboratories producing biologics, the Commission on Plasma Fractionation and Related Processes, public health laboratories and clinics. The laboratory will continue to serve as a center for training in protein chemistry. The Harvard Corporation has approved the construction of a new laboratory building in Cambridge for Dr. Cohn and his group as soon as funds are available. For teaching purposes the group will continue to function as a department of the Division of Medical Sciences of the Faculty of Arts and Sciences.

MICHIGAN

Annual Clinical Institute.—The Michigan State Medical Society's annual Postgraduate Clinical Institute will be held at the Book-Cadillac Hotel, Detroit, March 8-10. Out of state speakers include:

George Crile Jr., Cleveland, Treatment of Hyperthyroidism.
J. Mason Hundley Jr., Baltimore, Radiation Therapy for Benign Uterine Pathology.
Leo G. Rigler, Minneapolis, Roentgenologic Diagnosis of Diseases of Chest.
Francis E. Senear, Chicago, Advances in Dermatology.
Walter C. Alvarez, Rochester, Minn., Abdominal Pain Without Local Organic Disease.
Marion A. Blankenhorn, Cincinnati, Specificity of the Vitamins and Their Clinical Use.
Franz G. Alexander, Chicago, Essentials in Psychotherapy.
William L. Benedict, Rochester, Minn., Ophthalmia Neonatorum.
Richard H. Freyberg, New York, The Steroid Hormone in Rheumatic Disease.
Julian P. Price, Florence, S. C., Drugs in Treatment of Children.
Isadore Snapper, New York, Treatment of Acute Anuria.
Waltman Walters, Rochester, Minn., Differential Diagnosis in Diseases of Upper Abdomen.
F. Bayard Carter, Durham, N. C., Indications for Cesarean Section.

A conference on cancer is scheduled for Wednesday at 4:20 p. m. and a clinical pathologic conference on Thursday at the same time. The R. S. Sykes Lecture will follow the luncheon Thursday at 1:15, when Dr. Plinn F. Morse, Detroit, will speak on "Laboratory Methods for the Diagnosis of Malignancy." The Michigan Heart Association's Heart Day program will follow the institute March 11 (THE JOURNAL, February 11, page 430).

MISSISSIPPI

Conferences on Cancer Diagnosis.—The University of Tennessee College of Medicine, Memphis, is conducting conferences in six northern Mississippi cities to help practicing physicians diagnose cancer. Conferences were held February 1 and 8 in Columbus; others will be held at Tupelo, March 2 and 9; Oxford, March 16 and 23; Clarksdale, March 30 and April 6; Grenada, April 12 and 19, and Greenwood, April 26 and May 3. Eight physicians on the university's staff serve as instructors for the conferences. The Mississippi Chapter of the American Cancer Society and the Mississippi State Medical Association are sponsoring the conferences with the cooperation of the University of Mississippi. The conferences, for which a small fee is charged, are open to any practicing physician in northern Mississippi. They begin at 2:30 p. m., recess for dinner and adjourn about 9 p. m. Physicians who attend will be awarded certificates. A total of twenty-four meetings will be held, including afternoon and evening meetings on two separate days in each of the six cities.

NEW YORK

Graduate Instruction.—The Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged the following graduate lectures: The Clinton County Medical Society, February 23 at 8:15 p. m. in the Champlain Valley Hospital Nurses Home, Plattsburg, will hear Dr. Bernard Rogoff, New York, speak on "Clinical Aspects with the Use of Cortisone, ACTH and Other Steroids in Rheumatic Disease." On February 28 the Oneida County Medical Society, meeting at 8:30 p. m. in Hutchings Hall of Utica State Hospital, will hear a discussion on "Lower Back Pain" by Drs. Thomas I. Hoen and John R. Cobb, both of New York, on its neurologic and orthopedic aspects, respectively. Two programs have been arranged for the Jefferson County Medical Society. On February 21 Dr. A. Wilbur Duryee of New York will speak on "Management of Peripheral Vascular Disease in the Aging" and on March 21 Dr. Victor W. Logan, Rochester, will speak on "Present Trends in Peptic Ulcer Therapy." Meetings will be held at the Black River Valley Club, Watertown, at 6:30 p. m. On March 20 the Geneva Academy of Medicine, meeting at the Bellhurst in Geneva at 8:30 p. m., will hear Dr. Henry H. Ritter, New York, speak on "Fractures."

New York City

Tuberculosis Conference.—The annual conference of the New York Tuberculosis and Health Association will be held March 7 at the Hotel Statler. The public is invited. The Tuberculosis Sanatorium Conference of Metropolitan New York will meet in conjunction with the association.

Meeting on Oral Pathology.—Lieut. Col. Joseph L. Bernier, chief of the Dental and Oral Pathology Section, Armed Forces Institute of Pathology, Washington, D. C., will read a paper entitled "Oral Lesions Which May Influence the Treatment of Periodontal Disease" at the monthly conference of the New York Institute of Clinical Oral Pathology February 27 at 9 p. m., New York Academy of Medicine.

Personals.—Dr. Girolamo Bonaccolto, associate clinical professor of ophthalmology, Post Graduate Medical School, New York University-Bellevue Medical Center, has been appointed director of the department of ophthalmology at St. Clare's Hospital.——Portraits of Drs. Robert H. McConnell and Charles H. Chetwood were unveiled January 12 in French Hospital, New York. They retired last year and hold emeritus status. Dr. McConnell had been attending physician at the hospital since 1906. Dr. Chetwood was director of the urologic service from 1920 until his retirement.——The New York Tuberculosis and Health Association has reelected Dr. Donald B. Armstrong as its president. Dr. Armstrong is second vice president of the Metropolitan Life Insurance Company in charge of the company's nursing, health educational and welfare program.

Lectures on Frontiers of Science and Medicine.—The New School for Social Research began February 7 a series of twenty-four lectures on "Frontiers of Research in Science and Medicine"; they will extend through May 23. The lectures, which are offered jointly without fee by the New School and the Institute for Muscle Research, are planned to educate the layman in the problems, methods and achievements of scientific investigations and to afford students of science and medicine an opportunity to see their colleagues at work. Current problems in chemistry and biochemistry, in biophysics and in medicine will be discussed. Among those who will take part are Dr. Albert Szent Gyorgyi, in charge of research at the Institute for Muscle Research, Marine Biological Laboratory, Woods Hole, Mass., and Nobel prize winner in medicine and physiology, 1937; Dr. Otto H. Warburg, director, Kaiser Wilhelm Institute, Berlin-Dahlem, Nobel prize winner in medicine; Dr. Harry Goldblatt, Institute for Medical Research, Cedars of Lebanon Hospital, Los Angeles, and a group from Columbia University.

PENNSYLVANIA

Ophthalmology and Otolaryngology Meeting.—The annual meeting of the Pennsylvania Academy of Ophthalmology and Otolaryngology will be held May 12-14 at the Bedford Springs Hotel, Bedford, under the presidency of Dr. Daniel S. DeSito, Pittsburgh, with guest speakers Drs. Frank D. Costenbader, Washington, D. C.; John E. L. Keyes, Cleveland; Francis L. Lederer, Chicago; Richard G. Scobee, St. Louis, and Frank B. Walsh, Baltimore. In addition to the formal presentations, twelve study clubs will be conducted, to run concomitantly with the scientific sessions. There will also be an open forum and an "Information Please" type of session with the topics "Refraction Difficulties in Presbyopia" and "Common Office Procedures in Otorhinolaryngology."

Philadelphia

Phi Lambda Kappa Lecture.—Dr. Joe Vincent Meigs, clinical professor of gynecology, Harvard Medical School, Boston, will deliver the Phi Lambda Kappa Lecture March 8 at 8 p. m. in McClellan Hall of Jefferson Medical College on "Carcinoma of the Cervix."

Dr. Hubbard Made Department Chairman.—Dr. John P. Hubbard, Philadelphia, has been appointed George S. Pepper Professor of Public Health and Preventive Medicine and chairman of the department of public health and preventive medicine in the University of Pennsylvania School of Medicine, Philadelphia. Dr. Hubbard received his degree in medicine from Harvard Medical School, Boston, in 1931. As a Rockefeller Traveling Fellow in pediatrics and public health, he had an opportunity to study public health methods in Europe and Japan, then returned to Boston to engage in practice, teaching and research at the Children's Hospital. During the war Dr. Hubbard, as a colonel in the Medical Corps of the U. S. Army, joined the public health department of the military government of the Supreme Headquarters of the Allied Expeditionary Forces. In this capacity he performed military missions in France and Denmark and was decorated by the Danish government with the Order of Dannebrog. After the war he became director of the Study of Child Health Services of the American Academy of Pediatrics, which study received the Lasker Award in 1949.

Pittsburgh

Dr. Hammon Heads Department of Epidemiology.—Dr. William M. Hammon, Berkeley, Calif., has been appointed professor and head of the department of epidemiology at the University of Pittsburgh Graduate School of Public Health, effective February 1. He will also be responsible for the instructional and research interests of the school in the field of microbiology. Dr. Hammon received his M.D. degree in 1936 and his Doctor of Public Health degree in 1939, from Harvard Medical School, Boston, where he continued as an instructor for a year. He joined the Hooper Foundation of the University of California, San Francisco, as a lecturer in 1940 and advanced to the rank of professor in 1947. He became a lecturer in the university's School of Public Health in 1944, associate professor and dean in 1946 and professor in 1947.

TEXAS

State Health Council Chartered.—The Texas Health Council, a statewide organization of professional and lay persons interested in improving medical care in Texas, was issued a charter January 5 by the secretary of state in Austin. Dr. George A. Schenewerk, Dallas, Dr. Lee L. D. Tuttle, Houston, and Jerome K. Crossman, Dallas, are the incorporators; they are also on the board of directors of the organization. A preliminary meeting of the council was held last March. Since that time representatives of the various participating groups have served as a planning committee to complete the necessary organizational framework. The principal objective of the council has been announced as the establishment of local community health councils throughout the state to help make better health more accessible and the cost less.

Annual Spring Clinical Conference.—The Dallas Southern Clinical Society will present its annual spring clinical conference March 13-16 with headquarters at the Hotel Adolphus and the Drake Hotel. The program will include general assemblies, afternoon and evening symposiums and a clinical pathologic conference. Guest speakers include:

Paul B. Beeson, Atlanta, Ga., Supportive Measures in Management of Acutely Ill Patients.
Willis R. Brown, Little Rock, Ark., Practical Endocrine Therapy in Gynecology.
Jerome W. Conn, Ann Arbor, Mich., The Diabetic Patient.
George W. Crile Jr., Cleveland, Treatment of Hyperthyroidism.
Harry Eagle, Bethesda, Md., Treatment of Syphilis.
Rubin H. Flocks, Iowa City, Medical Management of Renal Calculi.
Ralph K. Ghormley, Rochester, Minn., Lesions of the Vertebrae Causing Backache.
Frank Glenn, New York, Surgical Treatment of Biliary Tract Disease.
H. Dabney Kerr, Iowa City, Hazards and Prevention of Irradiation Injury to Technical Workers and Patients.
John M. McLean, New York, Ophthalmologic Approach to Progressive Postoperative Exophthalmos.
Mitchell I. Rubin, Buffalo, Infection of the Urinary Tract.
Robert E. Votaw, St. Louis, Sinusitis and Chronic Pulmonary Disease.

The first evening session will be devoted to affairs of American medicine with Dr. Ernest E. Irons, President of the American Medical Association, Chicago, as the principal speaker. The registration fee of $20, which includes lectures, lunches, evening meetings and the annual banquet Thursday evening, may be sent to the Dallas Southern Clinical Society, Medical Arts Building, Dallas 1.

GENERAL

List Health and Safety Films.—The October issue of the magazine *See and Hear* contains a comprehensive list of 16 mm. motion pictures and film strips dealing with health education and safety. A brief comment with regard to the audio-visual programs of several national health organizations is included. Copies may be purchased from Audio-Visual Publications, 812 North Dearborn Street, Chicago 10.

Aid for Research on Sex Problems.—The Committee for Research in Problems of Sex of the National Research Council expects to have a few thousand dollars available for new grants in aid during the fiscal period July 1, 1950 to June 30, 1951. Applications will be received until March 15. Blanks may be obtained from the Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, Washington 25, D. C. Preliminary inquiries should be addressed to Dr. George W. Corner, chairman of the committee.

Appoint Head of Railroad Health Department.—Dr. E. Bryce Robinson Jr. has been appointed superintendent of the Tennessee Coal, Iron and Railroad Company's department of health, succeeding the late Dr. Lloyd Noland, who died November 27. Dr. Robinson received his M.D. degree at Tulane University of Louisiana School of Medicine, New Orleans, in 1936. He interned at the company's Employee's Hospital in Fairfield, Ala., and immediately joined the hospital staff as chief of the anesthesiology department. He saw active duty with the Medical Corps of the United States Army and returned to his duties with the Tennessee company in 1946.

Military Medicine Meeting.—The thirteenth session of the International Office of Documentation of Military Medicine and Pharmacy will be held in Monte Carlo, Monaco, May 3-7, under the presidency of Brig. Gen. Ignacio Landero Ramirez. Sessions will be held at the Quai des Etats-Unis. Subjects under discussion will include: teaching of international medical law; civil and military collaboration for defense against atomic bomb warfare; use of antibiotics; treatment of burns; repercussions of the new Geneva Conventions in military medi-

cine. On May 6 studies will be continued at the Mediterranean University Center in Nice, France, with a closing banquet at 8 p. m. Registration should be made before April 1; the fee is 1,000 francs. For information apply to International Office of Documentation of Military Medicine, 2a Boulevard des Moulins, Monte Carlo, Principality of Monaco, Europe.

Chest Disease Essay Award.—The American College of Chest Physicians is offering an annual cash prize award of $250 for the best original contribution on any chest disease. Competition is open to contestants of foreign countries as well as those in the United States. The first award will be made at the annual meeting of the college in San Francisco, June 22-25. The college reserves the right to publish the essay in its official publication. Five copies of the manuscript, typewritten in English, should be submitted not later than May 1. The only means of identification of the author or authors shall be a motto or other device on the title page and a sealed envelope, bearing the same motto on the outside, enclosing the name of the author or authors. Information may be obtained from the executive secretary of the college, 500 North Dearborn Street, Chicago 10.

Poliomyelitis.—According to Louis I. Dublin, Ph.D., statistician of the Metropolitan Life Insurance Company, attack rates last year for poliomyelistis ranged from a high of 86 cases per 100,000 population in Idaho to a low of 5 in South Carolina. Two thirds of the states recorded rates of 20 per 100,000 population, which is considered of epidemic proportions. In North Carolina the attack rate in 1949 was only one tenth of the 1948 figure; in Maine the rate in 1949 was 12 times that for the previous year. Even in states with high rates in both 1948 and 1949, different areas within the state were generally affected each year. New York and New Jersey in the 1916 epidemic, Minnesota in 1946 and South Dakota in 1948 all reported rates well over 125 per 100,000 population. For the nation as a whole last year, three fourths of the cases occurred July through September. Progress in the battle against poliomyelitis seems indicated in the recent reduction of the case fatality rate, according to Dr. Dublin. Although the reported incidence rate of poliomyelitis in the United States in 1949 was about twice that for 1931, the death rate among children insured in the industrial department of the Metropolitan Life Insurance Company last year was only about half that experienced in 1931.

College of Physicians Postgraduate Courses.—The American College of Physicians has arranged the following postgraduate courses in cooperation with the institutions where they will be given: A course in diseases of the blood, diagnosis and treatment, will be presented March 13-18 at Cornell University Medical College and the New York Hospital under the direction of Dr. Irving S. Wright. Maximal registration is 100. Fee for members is $30; for nonmembers $60. A course in recent developments in the cardiovascular field will be given March 20-25 at Michael Reese Hospital, Chicago, under the direction of Dr. Louis N. Katz. Maximal registration is 50, and the fee is $30 for members and $60 for nonmembers. Electrocardiography, basic principles and interpretation, will be presented May 8-13 at Massachusetts General Hospital, Boston, under the direction of Dr. Conger Williams. The course is limited to those who have had some previous experience in the field. Maximal registration is 25, and the fee is $60 for members and $120 for nonmembers. A course in endocrinology will be given May 15-20 through the University of Illinois College of Medicine, Chicago, under the direction of Dr. Willard O. Thompson. The faculty will be from all parts of the United States and Canada. Each day at luncheon there will be a round table discussion, in which the faculty will participate. Meetings will be held in the Illinois Room of the La Salle Hotel. Maximal registration is 100, and the fee is $30 for members and $60 for nonmembers. On May 15-20 the dynamics of metabolic diseases will be presented through the New York University Post Graduate Medical School at the New York University-Bellevue Medical Center. Basic and clinical experience will be given in recent developments in the field of internal medicine with emphasis on diagnosis and treatment of altered metabolic states.

Accidents in 1949.—The National Safety Council, Chicago, reports that 91,000 persons were killed in accidents during 1949 and 9,400,000 were injured at an economic loss of $7,200,000,000. Huge as the toll was, it represented a saving of 3,000 lives from the 1948 total, a reduction of 3 per cent. Motor vehicle accidents led the list as the nation's no. 1 accident killer, with home accidents, first last year, running a close second. Accidents in all classifications showed decreases; the largest (6 per cent) was in occupational fatalities. Of the 1,000 reduction in occupational deaths, 400 were in the coal-mining industry alone, but the council points out that strikes and a shortened work week played an important part in the reduction. The 1949 all-accident death rate was 61.2 per 100,000 population. One of every 16 persons in the United States suffered a disabling injury in 1949.

Falls brought death to 24,200 persons, a 2 per cent decrease over 1948; burns, 7,800, a 6 per cent decrease; drownings, 6,800, about the same as in 1948; firearms, 2,200, virtually unchanged, and catastrophes in which the toll was at least 5 lives, more than 1,200, according to the Metropolitan Life Insurance Company. Three catastrophes in 1949 caused as many as 50 deaths each—an Illinois hospital fire, an Arkansas tornado and the crash of a transport plane at the Washington, D. C., airport. Three other catastrophes caused between 25 and 50 deaths—two airplane crashes and the blizzard in the Mountain States.

Of the forty-four states which reported their complete motor vehicle death toll for the year, Vermont led the twenty-nine states which reported decreases over 1948 with a decrease of 22 per cent. Among cities with more than 200,000 population, Portland, Ore., and Kansas City, Mo., had the largest reductions in fatalities, each 41 per cent below 1948. San Francisco was next with a 40 per cent drop, and Cincinnati followed with a 39 per cent decrease.

Disabling injuries from home accidents numbered 4,500,000, and wage loss, medical expense and the overhead costs of insurance totaled about $650,000,000. Deaths from occupational accidents in 1949 totaled 15,000, about 6 per cent fewer than in 1948, but total all-industry employment decreased about 1 per cent, with manufacturing employment down 7 per cent. Disabling injuries from work accidents numbered about 1,850,000. Economic loss from occupational accidents totaled about $2,600,000,000. Coal-mine deaths totaled 593 in 1949—41 per cent below the 1948 figure. Among railroad employees in the first nine months fatalities were 301, a decrease of 29 per cent, and injuries were down 27 per cent to a total of 17,126. Deaths to workers from all accidental causes totaled 45,500 (15,000 on the job and 30,500 off the job), a 4 per cent decrease from 1948.

The 1949 death total for public (not motor vehicle) accidents was about 16,000, and nonfatal disabling injuries numbered about 2,000,000. Four fatal accidents (excluding a propeller accident) occurred in the domestic passenger-carrying operations of scheduled air transports during 1949. The death total was 105, including 93 passengers and 12 crew members. The passenger death rate per 100,000,000 passenger miles in 1949, based on preliminary information, was 1.3. During the first nine months of 1949 the railroad accidents showed a death toll of 2,413, a 13 per cent decrease from 1948, and injuries dropped 25 per cent to a total of 24,455. Grade crossing fatalities were down 7 per cent and injuries declined 12 per cent; passenger deaths numbered 15, a 57 per cent drop, and trespasser deaths numbered 971, a decrease of 11 per cent from 1948. The preliminary estimate of fire losses in 1949, made by the National Board of Fire Underwriters, was $668,000,000, or 6 per cent less than the comparable preliminary estimate for 1948.

CORRECTION

Personal.—Dr. George Baehr has been appointed chairman of the 23 man Health Committee of the Community Service Society of New York, not of the New York Academy of Medicine as was stated in THE JOURNAL, January 21, page 189.

Radio Transcription Services.—In THE JOURNAL, Jan. 28, 1950, page 260, the statement "A recent survey shows that 150 more stations have broadcast" should have read, "A recent survey shows that 15 or more stations have broadcast".

Marriages

MAURICE W. KEARNEY JR., Brooklyn, to Miss Joan Mary Brophy of Dalton, Mass., January 14.

HENRY FEINTUCH, Miami Beach, Fla., to Miss Harriet Rebhun of New York, January 16.

FONTAINE B. MOORE to Miss Madeleine Ashley Luce, both of New York, January 21.

EUGENE A. REILLY, Bayonne, N. J., to Miss Elvira Oshinski of Clifton, January 7.

BLAINE L. RAMSAY to Mrs. Patricia Ann Viers, both of Chicago, January 10.

Deaths

Otis Franklin Akin, Portland, Ore.; born in Portland, Ore., Jan. 5, 1872; University of Oregon Medical School, Portland, 1909; member of the American Medical Association; professor emeritus of orthopedics at his alma mater; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgery; past president of the Multnomah County Medical Society, Portland Orthopaedic Club, and the North Pacific Orthopedic Society; on the board of directors of the Oregon Mutual Savings Bank; on the staffs of the Doernbecher Memorial Hospital and the Good Samaritan Hospital, where he died December 28, aged 77, of bronchopneumonia and peritonitis.

George Douglas Head ⊕ Minneapolis; born in Elgin, Minn., Sept. 10, 1870; University of Minnesota College of Medicine and Surgery, Minneapolis, 1895; member of the House of Delegates of the American Medical Association in 1912, 1918 and 1919; for many years on the faculty of his alma mater; past president of the Minnesota Academy of Medicine, Minnesota Society of Internal Medicine, Minneapolis Pathological Society, Minnesota State Medical Association and the Hennepin County Medical Society; served during World War I; formerly on the staffs of Abbott Hospital and Asbury Hospital; died December 19, aged 79, of coronary thrombosis.

Maurice Norbert Bellerose, Rutland, Vt.; University of Vermont College of Medicine, Burlington, 1929; formerly on the faculty of his alma mater; specialist certified by the American Board of Orthopaedic Surgery; member of the American Medical Association and American Academy of Orthopaedic Surgery; served during World War II; affiliated with the Mary Fletcher and Bishop De Goesbriand hospitals in Burlington and the Rutland Hospital; died in the Evans Memorial Hospital, Boston, December 27, aged 48, of adenocarcinoma of the pancreas.

Douglas Davison Baugh ⊕ Columbus, Miss.; University of Pennsylvania School of Medicine, Philadelphia, 1929; fellow of the American College of Physicians; served on the staff of the Mississippi State Hospital in Whitfield; died in Jefferson Hospital, Birmingham, Ala., December 17, aged 48, of heart disease.

Jules Leon Blumenthal, New York; Columbia University College of Physicians and Surgeons, New York, 1900; member of the American Medical Association; began his work with the city health department in 1905 as a medical inspector and advanced through civil service examinations to director of the bureau of child hygiene in 1924; retired Sept. 1, 1940; died in Mount Sinai Hospital December 13, aged 71, of cerebrovascular accident.

Edmund Clyde Boots ⊕ Pittsburgh; University of Pittsburgh School of Medicine, 1920; specialist certified by the American Board of Internal Medicine; member of the American College of Chest Physicians; fellow of the American College of Physicians; on the staff of the Columbia Hospital; medical supervisor of the city public schools; died December 24, aged 55, of coronary occlusion.

John William Boren, Marinette, Wis.; Northwestern University Medical School, Chicago, 1912; member of the American Medical Association; fellow of the American College of Surgeons; affiliated with Marinette (Wis.) General Hospital and St. Joseph's Hospital in Menominee, Mich.; died December 15, aged 60, of aortic stenosis.

Arthur William Boslough ⊕ Wausau, Wis.; Rush Medical College, Chicago, 1905; an Associate Fellow of the American Medical Association; died November 21, aged 68, of posterolateral sclerosis.

Norton W. Bowman ⊕ Flora, Ill.; Miami Medical College, Cincinnati, 1895; died October 9, aged 77, of coronary occlusion.

Earl Goodsell Bramble, Corona Del Mar, Calif.; University of Kansas School of Medicine, Kansas City, 1941; member of the American Medical Association; served during World War II; died near Banning December 19, aged 34, when his private plane crashed.

Clemmie C. Brannen, Moultrie, Ga.; Atlanta Medical College, 1914; member of the American Medical Association; died November 16, aged 61, of carcinoma of the pancreas.

Herbert Andrew Browne ⊕ Galena, Kan.; Kansas City (Mo.) Homeopathic Medical College, 1898; for two terms mayor of Galena; served during World War I; formerly a member of the state board of health; on the staffs of St. John's Hospital and Freeman Hospital in Joplin, Mo., where he died November 20, aged 71, of acute cardiac dilatation.

Joseph Abner Camp ⊕ Roberta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901; died October 22, aged 71, of carcinoma.

Kasimier Gabriel Cieslak, Cleveland; Cleveland-Pulte Medical College, 1913; affiliated with the Evangelical Deaconess and Grace hospitals; died in Miami, Fla., December 12, aged 71.

John Ed Cunning, Little Rock, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1924; member of the American Medical Association; formerly secretary of the El Paso County (Colo.) Medical Society; on the staff of Arkansas State Hospital; died December 16, aged 53, of injuries received in an automobile accident.

Leonard Daniel Dieter ⊕ Syracuse, Neb.; Creighton University School of Medicine, Omaha, 1926; died December 13, aged 51, of injuries received in an automobile accident.

John Clarke Dovell, Paden, Okla.; Barnes Medical College, St. Louis, 1902; member of the American Medical Association; died in St. Anthony Hospital, Oklahoma City, November 5, aged 77, of cirrhosis of the liver.

Alfred Gilbert Forman, Hopewell Junction, N. Y.; University and Bellevue Hospital Medical College, New York, 1911; fellow of the American College of Surgeons; affiliated with University Heights Sanitarium and on the attending staffs of St. Elizabeth's and Fordham hospitals in New York; chief surgeon emeritus at Lutheran Hospital in New York, where he died January 3, aged 63, of pyelonephritis due to carcinoma of left ureter.

Richard McClellan Francis, Prescott, Ariz.; Missouri Medical College, St. Louis, 1889; died December 25, aged 84.

Earle Ruben Furgason ⊕ Independence, Kan.; University of Kansas School of Medicine, Kansas City, 1920; died November 1, aged 57, of coronary thrombosis.

Bert Edward Goodman, Warren, Ohio; Jefferson Medical College of Philadelphia, 1903; member of the American Medical Association; past president of the Trumbull County Medical Society; school physician; affiliated with St. Joseph's Riverside Hospital and Trumbull Memorial Hospital, where he died December 19, aged 73, of myocardial infarction.

William F. Grigg, Richmond, Va.; Medical College of Virginia, Richmond, 1909; member of the American Medical Association; died in the Medical College of Virginia Hospital November 29, aged 66, of coronary occlusion.

Nils Hansson, Chicago; Bennett Medical College, Chicago, 1898; died in the Swedish Covenant Hospital January 4, aged 83, of arteriosclerosis.

James S. Hinkle, Martinsville, Ind.; Medical College of Ohio, Cincinnati, 1881; died in Indianapolis December 19, aged 90, of cerebral arteriosclerosis.

Joseph William Howard ⊕ Kansas City, Mo.; University Medical College of Kansas City, 1903; member of the American Academy of Ophthalmology and Otolarnygology; affiliated with St. Mary's and St. Luke's hospitals; died November 19, aged 80, of cerebral hemorrhage.

Frank Miller Howes ⊕ New Bedford, Mass.; Harvard Medical School, Boston, 1910; affiliated with St. Luke's Hospital; died December 23, aged 64, of coronary occlusion.

G. B. Irvine ⊕ Williamson, W. Va.; University College of Medicine, Richmond, 1901; past president and secretary of the Mingo County Medical Society; formerly city health officer; served on the staff of Williamson Memorial Hospital; died in Roanoke, Va., January 4, aged 70, of arteriolar nephrosclerosis.

Henry Jacobson, St. Louis; Missouri Medical College, St. Louis, 1886; member of the American Medical Association; died December 20, aged 83, of cerebral thrombosis.

George Stafford Kerr, Dalton, Ga.; University of Texas Medical Branch, Galveston, 1942; member of the American Medical Association; died November 24, aged 41, of coronary occlusion.

William Fay Lake ⊕ Atlanta, Ga.; Atlanta College of Physicians and Surgeons, 1913; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; affiliated with Grady Hospital and Crawford W. Long Memorial Hospital; died in Clearwater Beach, Fla., December 20, aged 61, of cerebral thrombosis, arteriosclerosis and coronary thrombosis.

Harry Allen Lakin, Harrisburg, Pa.; University of Maryland School of Medicine, Baltimore, 1903; member of the American Medical Association; for many years medical examiner for the Metropolitan Life Insurance Company; died in Harrisburg Hospital December 8, aged 73, of coronary occlusion.

⊕ Indicates Fellow of the American Medical Association.

Latimer A. J. La Motte, Los Angeles; Denver and Gross College of Medicine, 1908; member of the American Medical Association; emeritus clinical professor of surgery (ophthalmology) at the University of Southern California School of Medicine; at one time chief of the eye clinic of Los Angeles General Hospital; died November 11, aged 65, of coronary thrombosis.

Emery Don Lukenbill ✠ Indianapolis; Indiana University School of Medicine, Indianapolis, 1919; died December 19, aged 55, of coronary occlusion.

Edwin Lewis Mabry, Carrollton, Miss. (licensed in Mississippi in 1907); died November 30, aged 71, of heart disease.

Kenneth McCullough ✠ Waycross, Ga.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1915; fellow of the American College of Surgeons; formerly secretary of the Ware County Medical Society; on the staffs of the Waycross County and Atlantic Coast Line hospitals; died recently, aged 58, of bronchogenic carcinoma.

James F. A. McGinn, Pawtucket, R. I.; College of Physicians and Surgeons, Baltimore, 1910; member of the American Medical Association; died December 31, aged 63, of lobar pneumonia, chronic endocarditis and chronic arthritis.

Robert Henry McGinnis ✠ Jacksonville, Fla.; University of Maryland School of Medicine, Baltimore, 1897; fellow of the American College of Physicians; past president of the Florida Medical Association and the Duval County Medical Society; for many years associated with the Duval County Hospital; died in Riverside Hospital December 27, aged 80, of intestinal obstruction, carcinoma of the stomach with metastatic carcinoma of the liver.

James Santee McNett, Cameron, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1914; served with the British Army Medical Corps during World War I; was coroner; died December 13, aged 63, of heart disease and arteriosclerosis.

William Gray Meharg, Anniston, Ala.; Memphis (Tenn.) Hospital Medical College, 1899; member of the American Medical Association; died in Oatchee November 6, aged 75, of coronary thrombosis.

Raymond Boileau Mixsell, Pasadena, Calif.; Columbia University College of Physicians and Surgeons, New York, 1907; died December 27, aged 67, of miliary tuberculosis, myxedema and carcinoma of the sigmoid.

John Bennett Morrison, Vista, Calif.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1895; at one time practiced in Newark, N. J., where he was on the staffs of the Presbyterian Hospital and the Hospital of St. Barnabas and for Women and Children; for many years secretary of the Medical Society of New Jersey; fellow of the American College of Surgeons; died December 14, aged 83, of cerebral hemorrhage and cardiorenal disease.

Joseph Morris Morse ✠ Brooklyn; University and Bellevue Hospital Medical College, New York, 1914; fellow of the International College of Surgeons; associate surgeon at Maimonides Hospital; died in Unity Hospital December 28, aged 57, of cardiac decompensation.

Charles Rothelles Mowery ✠ Spokane, Wash.; John A. Creighton Medical College, Omaha, 1902; fellow of the American College of Surgeons; affiliated with Providence Hospital in Wallace, Idaho, Sacred Heart and Deaconess hospitals; died December 29, aged 72, of cerebral hemorrhage.

William Daniel Nappe, Chicago; Chicago College of Medicine and Surgery, 1915; served during World War I; one of the founders of Belmont Hospital; affiliated with Swedish Covenant Hospital; died January 13, aged 57, of coronary sclerosis.

Marian Anastasia Staats Newcomer ✠ New York; Syracuse University College of Medicine, 1918; served as a lecturer and consultant in Cathedral High School for Girls, Manhattanville College of the Sacred Heart and Duchesne Residence School; author of "Bewildered Patient"; died in New York Hospital December 29, aged 60, of cerebral hemorrhage and hypertension.

John Orpheus Newton ✠ East Cleveland, Ohio; Vanderbilt University School of Medicine, Nashville, Tenn., 1930; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; past president of the Cleveland Radiological Society; for many years roentgenologist at Huron Road Hospital, where he died December 16, aged 44, of cerebral hemorrhage and aneurysm.

John Joseph Nolan, Oak Park, Ill.; Northwestern University Medical School, Chicago, 1904; formerly member of the city board of health; for many years on the staff of Oak Park Hospital; died December 16, aged 71, of chronic myocarditis complicated by fracture of left femur due to a fall.

Bertram Allen Norman, Shreveport, La.; University of Nashville (Tenn.) Medical Department, 1909; formerly secretary of the Webster Parish Medical Society; served during World War I; associated with the Caddo-Shreveport Health Department; died at his home in Bossier City December 6, aged 63, of heart disease.

Harry N. Oldham, Hartsville, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1901; died in Bartholomew County Hospital, Columbus, December 14, aged 71, of arteriosclerotic gangrene of the left leg.

John Bernard Parham, Tallapoosa, Ga.; Bennett Medical College, Chicago, 1915; member of the American Medical Association; died in the Georgia Baptist Hospital, Atlanta, recently, aged 59, of coronary occlusion.

John Wells Parrish ✠ Brooklyn; College of Physicians and Surgeons, medical department of Columbia College, New York, 1887; an Associate Fellow of the American Medical Association; formerly on the faculty of the Long Island College of Medicine; consulting pediatrician at the Brooklyn Eye and Ear, Brooklyn and Kings County hospitals; one of the founders of St. Christopher's Hospital; died in Long Island College Hospital November 27, aged 84, of cerebral hemorrhage.

Franklin Patterson, Chicago; Chicago Homeopathic Medical College, 1897; member of the American Medical Association; died in Lake Bluff, Ill., in December, aged 80, of carcinoma of the lung.

Curtis F. Powell, Polo, Ill.; Marion-Sims College of Medicine, St. Louis, 1898; member of the American Medical Association; formerly member of the board of education; served on the staff of the Dixon (Ill.) State Hospital; died January 8, aged 73, of coronary disease.

William Elmer Radcliff ✠ Caldwell, Ohio; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; in 1944 vice president of the Washington County Medical Society and in 1945 president; died in Memorial Hospital, Marietta, November 30, aged 75, of coronary thrombosis.

Lawrence Duvaul Richards, Seminole, Texas; Memphis (Tenn.) Hospital Medical College, 1902; member of the American Medical Association; died in the Lubbock (Texas) Hospital October 2, aged 73, of heart disease.

James Corey Riffe, Covington, Ky.; University of Cincinnati College of Medicine, 1930; member of the American Medical Association; served during World War II; died December 23, aged 46, of coronary disease.

George Truett Riley, Binghamton, N. Y.; Baylor University College of Medicine, Dallas, Texas, 1930; member of the American Medical Association, Binghamton Academy of Medicine and the American Society of Anesthetists; served during World War II; Port Dickinson school physician, health officer of the town of Fenton and physician for Broome County Jail; on the staff of the Binghamton City Hospital; died November 29, aged 44, of heart disease.

Carl Glennis Roberts ✠ Chicago; Chicago College of Medicine and Surgery, 1911; fellow of the American College of Surgeons; specialist certified by the American Board of Surgery; member of the executive board and past president of the National Medical Association; for many years associated with the Provident, Walther Memorial and St. Elizabeth hospitals; died January 15, aged 63, of coronary occlusion and hypertension.

Charles Irving Rosenberg, Olive View, Calif.; George Washington University School of Medicine, Washington, 1939; for many years on the faculty of his alma mater; died in Burbank December 14, aged 52, of cerebral hemorrhage.

Karl Rosenthal, New York; Universität Köln (Cologne), Medizinische Facultät, Köln, Germany, 1919; member of the American Medical Association; died October 21, aged 58.

Harley Lopierre Sayler, Des Moines; Drake University Medical Department, Des Moines, 1898; member of the American Medical Association; past president of the Iowa State Department of Health; for many years city health officer; died in Iowa Lutheran Hospital December 25, aged 80, of cerebral hemorrhage.

Emile Gabriel Schuster, Oakland, Calif.; McGill University Faculty of Medicine, Montreal, Canada, 1940; member of the American Medical Association; served during World War II and was awarded the Distinguished Service Cross; died December 23, aged 44, of coronary thrombosis.

Samuel M. Seafuse, Elmira, N. Y.; College of Physicians and Surgeons, Baltimore, 1893; member of the American Medical Association; died October 29, aged 80, of arteriosclerosis and cerebral hemorrhage.

John Sengstacken, Stony Point, N. Y.; University of the City of New York Medical Department, New York, 1889; member of the American Medical Association; for many years health officer of Stony Point; served on the staffs of Summit Park Sanatorium, Pomona, Good Samaritan Hospital in Suffern, N. Y., and Nyack (N. Y.) Hospital; died December 31, aged 87, of chronic myocarditis.

Laurence S. Shauger, Ogema, Wis.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1903; died October 19, aged 70, of coronary occlusion.

Raymond Linville Sheets ✦ Beaver Falls, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1920; on the staffs of the Beaver Valley General Hospital in New Brighton and Providence Hospital; died November 7, aged 57, of pulmonary tuberculosis and diabetes mellitus.

Jacob Theodore Sherman, Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1923; assistant professor of clinical obstetrics at the Cornell University Medical College, New York, where he was on the staff of the New York Hospital; on the staff of Coney Island Hospital; died January 6, aged 51.

Raymond Nelson Slate ✦ Detroit; University of Michigan Medical School, Ann Arbor, 1922; died in December, aged 60.

Alfred W. Smallman, Ellicottville, N. Y.; University of Buffalo School of Medicine, 1888; member of the American Medical Association; formerly mayor; on the courtesy staff of the City Hospital in Salamanca; president of the Bank of Ellicottville; died December 27, aged 88, of ruptured esophageal varices and ruptured gallbladder.

Lendon Howard Smith ✦ Portland, Ore.; Johns Hopkins University School of Medicine, Baltimore, 1915; associate clinical professor of pediatrics at the University of Oregon Medical School; specialist certified by the American Board of Pediatrics; formerly secretary of the Oregon State Medical Society; member of the American Pediatric Society; on the staffs of Doernbecher Memorial Hospital for Children and Multnomah Hospital; died December 21, aged 61.

Oney Percy Smith ✦ Troy, N. Y.; University of Vermont College of Medicine, Burlington, 1924; served during World War II; on the staff of the Troy Hospital; died January 6, aged 47, of coronary occlusion.

Walter E. Smith, Tulsa, Okla.; Missouri Medical College, St. Louis, 1898; formerly mayor of Collinsville; died November 24, aged 76.

George Albert Sollis, Herrick, Ill.; Barnes Medical College, St. Louis, 1908; member of the American Medical Association; served as mayor of Herrick; died October 4, aged 68, of coronary thrombosis.

George Horace Somers, Chicago; University of Wooster Medical Department, Cleveland, 1890; Long Island College Hospital, Brooklyn, 1891; formerly on the faculty of the Illinois Medical College; died December 31, aged 91, of coronary thrombosis and angina pectoris.

Fredric Weldin Splint ✦ New York; New York Homeopathic Medical College and Hospital, New York, 1916; member of the American Association of Industrial Physicians and Surgeons; for many years surgeon in the New York National Guard; formerly associated with the U. S. Public Health Service; died January 9, aged 67.

Irving J. Straus, Chicago; College of Physicians and Surgeons of Chicago, 1896; member of the American Medical Association; died January 14, aged 81, of right sided hemiplegia, arteriosclerosis and hypertension.

John Bartlett Stroud, Louisville, Ky.; Louisville Medical College, 1903; member of the American Medical Association; died December 17, aged 81, of pneumonia.

Karon Perkins Sutton, Lewisburg, Ky.; Starling Medical College, Columbus, 1884; member of the American Medical Association; died November 19, aged 88, of cardiac failure.

Martin Junius Taylor ✦ Houston, Texas; Memphis (Tenn.) Hospital Medical College, 1892; an Associate Fellow of the American Medical Association; fellow of the American College of Surgeons; affiliated with Memorial and Methodist hospitals; died October 21, aged 79, of cardiac decompensation.

Andrew Texley, Carroll, Neb.; Kansas City (Mo.) Homeopathic Medical College, 1900; Barnes Medical College, St. Louis, 1905; died January 5, aged 77.

Philip S. Titus ✦ Fort Wayne, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; for many years on the staff of St. Joseph's Hospital, where he died December 21, aged 66, of adenocarcinoma of the prostate.

Isidor Solomon Tunick ✦ New York; Columbia University College of Physicians and Surgeons, New York, 1903; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons and the International College of Surgeons; on the staffs of the Good Samaritan Dispensary and Hospital for Joint Diseases; died December 22, aged 69, of bronchopneumonia, following a cerebrovascular accident.

Carl Tuttle, Berlin Heights, Ohio; Western Reserve University Medical Department, Cleveland, 1884; died in the Norwalk (Ohio) Memorial Hospital November 27, aged 88.

Harry VenzKe, Pasadena, Calif.; University of Tennessee College of Medicine, Memphis, 1918; fellow of the American College of Surgeons; affiliated with the Collis P. and Howard Huntington Memorial Hospital and St. Luke Hospital, where he died December 11, aged 60.

Raoul Lazaar Vioran, Akron, Ohio; Jenner Medical College, Chicago, 1910; member of the American Medical Association; served as surgeon to the police and fire departments; affiliated with the City and St. Thomas hospitals; died December 6, aged 65, of coronary thrombosis.

Van Curtis Van Voorhis, Robinson, Kan.; Central Medical College of St. Joseph, Mo., 1898; member of the American Medical Association; died in Horton (Kan.) Hospital recently, aged 83, of cerebral hemorrhage.

Thomas Gale Wallin ✦ Chicago; Bennett Medical College, Chicago, 1913; associated with Illinois Masonic Hospital, where he died January 4, aged 63, of coronary thrombosis.

Samuel H. Watley, Lansing, Mich.; Michigan College of Medicine and Surgery, Detroit, 1897; died December 12, aged 77, of ruptured aneurysm of the abdominal aorta.

Edward Murray Welles Jr. ✦ Troy, N. Y.; born in 1883; Cornell University Medical College, New York, 1907; fellow of the American College of Surgeons; served in the medical corps of the U. S. Army during World War I and left the service as a colonel after fifteen years' duty, during which he received the distinguished service medal; on the staffs of Putnam Memorial Hospital in Bennington, Vt., Mary McClellan Hospital in Cambridge, Samaritan Hospital and Leonard Hospital, where he died January 1, aged 66, of coronary thrombosis.

Herbert Lewis Williams, Bartonville, Ill.; Northwestern University Medical School, Chicago, 1909; member of the American Medical Association; died in Proctor Hospital, Peoria, January 4, aged 66, of cerebral hemorrhage.

Wendell Holmes Williams, Tunica, Miss.; Memphis (Tenn.) Hospital Medical College, 1910; member of the American Medical Association; past president of the Clarksdale and Six Counties Medical Society; served during World War I; died in Memphis, Tenn., December 28, aged 65.

Walter Hugh Williamson, Portland, Ore.; Willamette University Medical Department, Salem, 1912; died December 31, aged 67, of cerebral arteriosclerosis and hypertension.

Jacob G. Woeger, Whiteside, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1913; member of the American Medical Association; county health officer; died December 21, aged 61, of coronary thrombosis.

Richard Carlisle Woodson, Birmingham, Ala.; Medical Department of Tulane University of Louisiana, New Orleans, 1904; member of the American Medical Association; affiliated with St. Vincent's and Jefferson hospitals; died December 23, aged 68, of myocarditis with decompensation, bronchiectasis and pulmonary fibrosis.

John Henry Wurthmann, South Norwalk, Conn.; Columbia University College of Physicians and Surgeons, New York, 1898; served on the staffs of the Lenox Hill, Mount Sinai and New York Post Graduate hospitals in New York; died December 20, aged 79.

George Hardin Yenowine ✦ Louisville, Ky.; Kentucky University Medical Department, Louisville, 1904; died in SS. Mary and Elizabeth Hospital December 16, aged 73, of coronary embolism.

Foreign Letters

PARIS

(From a Regular Correspondent)

Dec. 15, 1949.

The Fifth International Cancer Congress

The fifth International Cancer Congress will be held in Paris July 11-21, 1950, under the presidency of Professor Lacassagne. It will coincide with the commemorative manifestations of the fiftieth anniversary of the discovery of radium by Pierre and Marie Curie. Congress headquarters will be at the Sorbonne, where there will also be an exhibition relating to research, statistics, organization of centers of treatment, equipment and social struggle. To be admitted as a member of the congress, it is necessary to belong to or be recommended by a well known scientific or social organization. All registered participants can present at least one communication. The exact title and a summary of not more than 250 words must reach the secretary's office, 6 Marceau Avenue, Paris (8°), not later than April 1, 1950, or the communication will not be in the program. The duration of the report will be limited to 10 minutes. Registrations are to be made at the office of the International Union Against Cancer, 6 Marceau Avenue, Paris (8°). Fees are as follows: titular active members, $10; junior members (active members less than 30 years as of Jan. 1, 1950, $5, and associate members, $3. Members of the congress desiring to attend the sixth International Congress of Radiology, which will be held the following week in London, are requested to notify the secretary's office, to make possible organization of transportation in groups.

Research on Blood Sedimentation

A. Josserand and R. Blanc have made comparative studies on the blood sedimentation rate during the first quarter-hour and the first hour. These studies have shown that, in the course of nontuberculous pulmonary diseases, the figure for the first quarter-hour generally has appeared high, often rising at once, whereas the sedimentation curve is progressive in pulmonary tuberculosis. The authors attribute these reactions to the difference of intensity of the inflammatory process, and they have tried to ascertain, in 40 patients suffering from various diseases, whether it could be explained by variations of fibremia. In 14 of 16 patients with a sedimentation rate for the first quarter-hour equal to or 50 per cent more than the hourly rate, the fibrinogen rate (assessed by weighing) was definitely increased to more than 5.5 Gm. Two exceptions were noted, one in a case of chronic icterus with enlarged liver and cachexia, probably of neoplastic origin. In a group of 24 patients with a quarter-hour rate 50 per cent less than the hour rate, the fibrinogen rate in 21 was less than 5.5 Gm. This concordance of hyperfibrinemia and high sedimentation of the first quarter-hour was present in 87 per cent of the cases; it is still apparent in nontuberculous pulmonary diseases. It does not appear that, in this instance, fibrinogen is only the sign of an acute infectious condition which could be the real cause of the globular fall. At the meeting of Feb. 7, 1949 of the Medical Society of the Lyons Hospitals (published in *Lyon médical*, Nov. 13, 1949), Barbier confirmed these observations in his own research and drew attention to another laboratory method: "plasmatic formolgelification." It is from the work of Professors Gaté and Papacortas (Lyons) and has been perfected by Badin (Paris), who found that when gelling is constant and rapid the fibrinogen rate is greater than 5.60 Gm., which is in agreement with the observations of Josserand and Blanc. The first clinical results obtained by Barbier show that the "plasmatic formolgelification" is positive often within a few minutes, in pneumonia, abscess of the lung, purulent pleurisy, superimposed pyopneumothorax, tuberculous or nontuberculous pulmonary diseases and superimposed infection with pneumococci or pyogenic germs. It is negative in chronic pulmonary infections, chronic bronchitis and pulmonary tuberculosis, even when acute febrile outbreaks occur. The author is also pursuing his researches in other nonpulmonary diseases.

Industrial Oils and Bronchopulmonary Cancers

Impressed by the considerable increase of bronchial cancers, R. Huguenin, J. Fauvet and J. Bourdin of the Cancer Institute have made investigations of the plausible causes. After having considered first the possible role of tabagism, they detected in a large number of patients a prolonged contact with the vapors of certain industrial oils. These patients are mostly turners, millers, planers, mechanics and fitters working often on old-fashioned mills; vapors cause a thick fog of nebulized oils, over the lathes, impregnating the clothes, provoking dermatosis and, as aerosols do, entering the respiratory tract. These oils are known in industry as "cutting oil." Hydrosoluble when projected in a large jet, their chemical formulas vary; during the German occupation the oil was of an inferior quality, causing "tarring" on metal. The authors have noted that, of 112 patients, 32 were exposed to repeated and lasting contacts with industrial oil: 18 metallurgists, 8 firemen, 5 mechanics and 1 engineer pursuing researches on oils in the laboratory. Having, at first, limited their investigation to cancers of the lung, the authors suppose that, in the same professional groups, a certain number of cancers of the mouth, pharynx and larynx might be found. Cancers of the skin, which may be caused by contact with cancerogenic oils, are generally observed in older age groups. With the support of the "Joint Commission of Hygiene and Social Security," the authors have just begun more detailed researches, including medicosocial studies. In their communication to the Medical Society of the Paris Hospitals of July 8, 1949 (published in *Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris*) they invited the hospital doctors also to make investigations to search for the causes of certain cancers and to take preventive measures to protect workmen exposed to projections and oil vapors and to discover harmless oils.

A New Method of Tests with Methionine

E. Benhamou, A. Grech and D. Gardelle's method consists in the ingestion, or intravenous injection, of 2 Gm. of methionine and in measuring the rate of increase of urinary sulfates within twenty-four hours after administration. It explores the oxidizing function of the liver and, no doubt, the storage and catabolic function of amino acids. In a normal person, the urinary elimination rate of mineral sulfates is 87 per cent for twenty-four hours; in cirrhosis it is about 30 per cent in infectious icterus. After a fall to almost zero, the rate begins to return to normal, when the condition improves or when icterus subsides. In amyloid nephrosis the elimination rate is nearly normal (about 80 per cent), whereas in chronic nephritis with hyperazotemia it is low, almost zero.

Para-Aminobenzoic Acid in Dermatosis

Termine (Marseilles) used para-aminobenzoic acid in 2 cases of dermatosis due to sensitization following sulfonamide therapy and has noted a detoxicating potency. He has also used para-aminobenzoic acid successfully in 3 cases of dermatosis resulting from penicillin therapy, which leads him to suggest that para-aminobenzoic acid has general desensitizing properties. The author wonders whether the desensitizing action can be explained in terms of a spasmolytic effect by modification of the vago-sympathetic tonus, similar to the effect Benda obtained with para-aminobenzoic acid in certain dyspneic, asthmatiform accidents, or if it is due to a humoral modification of the acid-base balance, since, according to Lecoq, para-aminobenzoic acid

reduces the blood alkali reserve. Termine has drawn the attention of the French Society of Dermatology and Syphilology to these observations, published Aug. 28, 1949, in *Lyon médical*.

Acute Neurotoxic Reactions Due to Streptomycin

Damande, Ch. Dulong de Rosnay and their co-workers published (*Paris médical*, March 5, 1949) their observations in 10 cases of neurotoxic reactions to streptomycin. In 1 case there were epileptiform convulsions; in 3 cases tetany crisis occurred; in 4 cases fatal coma, and in 2 cases nonfatal coma. The authors believe that these reactions are due to the use of too high dosage and point out the necessity of checking reactions in mice before clinical use.

ISRAEL

(From a Regular Correspondent)

JERUSALEM, Jan. 10, 1950.

Services for the Sick in Israel

The steadily increasing immigration to Israel has presented a special problem to the health department. The gaps left in the health services had to be filled for the original population, but new hospitals and polyclinics had to be opened at the same time. The Kupat Cholim (Workers' Sick Fund) has played a leading role in this respect. The Kupat Cholim is the branch of the Federation of Jewish Labour (Histadruth) dealing with the services for the sick in Israel.

In 1949, 175,000 persons joined the Workers' Sick Fund, bringing the total number of members to 500,000. Each new immigrant can become a member of the Histadruth and consequently of the Kupat Cholim, paying no fees for the first three months. With the increase in members during 1949, the Kupat Cholim engaged 1,000 new doctors, nurses and administrative personnel, added another 220 beds to its hospitals and opened 150 new clinics in various parts of the country, including new immigrant settlements and camps.

The government has been contributing 25 per cent toward the upkeep of Kupat Cholim hospitals and will increase its support to 50 per cent during 1950. Medical attention for every new member costs 25 Israeli pounds, part of which is borne by the government.

A 350 bed hospital is now under construction to relieve the acute demand for hospital space, and the capacity of various existing hospitals has been increased. There are plans to build a new 140 bed hospital in the south and to expand the Haifa hospital by 60 beds and the Galilee children's hospital by 40.

Next year's budget has been fixed at 5,500,000 Israeli pounds, compared with the 4,250,000 budget of 1949.

Blood Group and Plasma Clots

In a lecture held in Jerusalem, Dr. G. J. Stark reported on the observation of new relations between the blood groups and clot formation.

Stark found that the plasma clots, formed on recalcification of citrated plasma, showed different appearances according to the blood groups of the plasma from which they were derived. The subgroups also showed marked differences. Group 0 plasma clots showed the smallest and most compact clots, whereas group B clots were large and translucent. Between these two extremes, the A, AB and subgroup clots were found. It was found that none of the known factors of the clotting mechanism could be held responsible for the results reported. Observation showed that the group specific signs manifest themselves only in the stage of clot contraction or clot syneresis, in which the clot reduces its volume and squeezes out fluid.

The probable causative factor for this effect must be present in the plasma and formed by the platelets on their disintegration. The properties of the supposed factor were investigated, and, so far as these investigations reveal, the new factor is a thermolabile, mechanolabile substance, appearing to be inactivated by hemolysis. Dilution tests showed, furthermore, that the factor must be present in a certain minimal concentration to impart the group-specific signs to the plasma clot. The fact that the phenomenon observed was noticed best between 3 and 7 days after the blood had been taken shows its connection with the platelets and the inactivation of the factor by ferments.

Free Milk for Children

According to Dr. Jean F. Mabileau, permanent representative in Israel of the United Nations International Children's Emergency Fund, 100,000 Israel children are to receive free milk and food at their schools through the fund, the executive board of which recently allocated $250,000 for this purpose.

An additional contribution is to be made by the government to give the milk distribution and school feeding scheme the widest possible range. The initial stage of the program will be medical. During the first half of 1950 first aid will be given to undernourished and sick children, both Jewish and Arab, and particularly to the new Yemen immigrants.

To fight rickets, one of the most prevalent diseases, 15 tons of cod liver oil have been requested by UNICEF representatives in Israel.

One of UNICEF's feeding and medical aid activities in Israel is the present antituberculosis campaign, which includes tests and vaccination of all inhabitants aged 1 to 30 years.

The Disease of Swineherds in Israel

Dr. Raphael Sandler describes 5 cases of infection with Leptospira pomona (December 1949 issue of *Harefu'ah*). Patients showed the typical picture of Weil's disease (leptospirosis). They were all workers in a pigsty. Since no similar cases appeared in the neighborhood, it appeared that the disease was related to the work the patients performed. The pigs with which the patients had come into contact were examined. In 42 per cent of the serum tested, agglutination against L. pomona was found positive at a dilution of 1:200 and in 6 per cent at 1:200. Owing to the war, the serums of 2 patients could not be examined until ten months later; one was positive for Leptospira pomona at 1:00 and the other at 1:200. Patients who had positive reactions to Leptospira icterohemorrhagiae, Leptospira grippotyphosa (Leptospira bovis) and Leptospira canicola had negative reactions during and after the illness.

In the light of the communications of Johnson (Australia) and Gsell (Switzerland) the aforementioned titers are considered to be significant. Three healthy persons from the same place who had no connection with swine did not show any reaction to these types of Leptospira.

These are the first cases of infection with L. pomona known in Israel, where leptospirosis communicated from cattle has aroused much interest in recent years. Until now infection with Leptospira pomona has been described in the literature only from Australia, Switzerland, Northern Italy and the Netherland Indies.

Cheaper Pharmaceutical Products Considered

Drastic reductions in the prices of pharmaceutical products, both imported and locally manufactured, have been announced by the Ministry of Supply and Rationing. The regulations will be published shortly.

The reductions, it was stated, were justified in view of the fact that prices of medical preparations had not been changed for a year, during which the cost of living had fallen considerably. The Price Controller has suggested to the Ministry that it reduce wholesalers' profits on such goods imported from the United States from 45 to 25 per cent and on those imported from the Sterling Bloc from 35 to 20 per cent; it is suggested, also, that the Ministry fix wholesalers' profit on locally made medical preparations at 15 per cent.

A year ago 70 per cent of all medical requirements were imported and 30 per cent made locally, the announcement said, stressing that today the figures were exactly reversed.

New Elisha Hospital in Haifa

In the beginning of June a new 225 bed hospital, Elisha Hospital, has been opened in Haifa, at the cost of IP. 180,000.

The hospital is situated on one of the most beautiful spots of the Carmel hills, overlooking the Haifa Bay. It is the most up-to-date hospital in the Middle East, with perfect technical facilities and services. In each room there is an outlet for oxygen, vacuum pressure and running ice water; the whole hospital is air conditioned. It has a deep freeze unit in the kitchen and the first huge pressure cooker in the country.

A special innovation in this country is the diaper service of the hospital. For infants born there, the hospital will provide a year's diaper and linen service, and laundered and sterilized supplies will be brought to the home.

MADRID

(From a Regular Correspondent)

Jan. 3, 1950.

International Congress of Urology

The Eighth Congress of the International Society of Urology was held at Barcelona Sept. 20-23, 1949. The official topics were: Pathologic Physiology and Treatment of Hydronephrosis, Treatment of Obstruction of Neck of Bladder (except cancer of the prostate) and Pathogenesis and Treatment of Cystalgias. Dr. C. Deming of the United States, an official speaker on the first topic, said that the cause of hydronephrosis is intrapyelic inverse pressure, which produces changes in blood circulation in the deferent vessels, with consequent atrophy of the glomeruli and increase of the caliber of the convoluted tubules. Hydrodynamics in hydronephrosis depends on ureteral obstruction and on renal secretion. The course of the disease is not related to diuresis, hydration or dehydration of the patient or splanchnicectomy. Urine retained in the pelvis escapes through different routes, other than the ureteral route. These factors, in association with obstruction to urinary secretion, result in atrophy of the parenchyma. The treatment consists of nephrectomy, provided the other kidney is normal and less than 25 per cent of the renal function of the involved kidney is affected by atrophy. If impairment of renal function is still more acute, the treatment is conservative, consisting of correction of obstruction, thus favoring drainage of the pelvis to improve the functions of the parenchyma. Ligation of abnormal blood vessels supplying a zone of the parenchyma, as used in plastic procedures, makes vascular ligation impossible. Pyeloplastic operations without drainage are indicated when there is no infection in the kidney. The speaker advised the use of a T-tube for uteropyelic drainage. The tube serves also the purpose of acting as a mold in uteropyelic repair.

Dr. R. Dossot, of France, said that hyronephrosis is a syndrome characterized by retention of urine with consequent dilatation of the ureteropyelic structures. It follows a mechanical disturbance in the elimination of urine, which is either congenital or acquired and either of mechanical or of dynamic origin. Primary hydronephrosis, which is due to changes of the pyeloureteral wall, should be differentiated from secondary hydronephrosis, which is due to some obstacle. The treatment of established hydronephrosis is surgical. Nephrectomy is indicated only in cases of parenchymal destruction, whereas conservative operations are intended to correct the cause of hydronephrosis and to reestablish passage of urine through the uteropyelic structures. In cases with advanced lesions, drainage of the pelvis by means of a ureteral sound often gives good results. Nephrectomy is clearly indicated in 50 per cent of the cases of hydronephrosis. Conservative operations give good results in reestablishing secretion and proper elimination, although the structure is but slightly modified.

Dr. J. Hellstrom of Sweden presented the results of his work, in collaboration with Drs. Giertz and Lindelom. From 1940 to 1949, they observed 100 cases of hydronephrosis and operations were performed in 82 cases. Urography by elimination was performed in the largest number of cases. Retrograde pyelography is dangerous, as it causes infection; only in rare cases, in the authors' group, was it performed. The section of a blood vessel which crosses the ureter and which favors the development and course of hydronephrosis is advisable only if the vessel is a vein or a small artery. Otherwise ureterovascular liberation of the vessel and its fixation to the pelvis above the ureter (to prevent its compression) are indicated. In the presence of infection and when stagnation after the operation seems possible, drainage of the pelvis is indicated.

Dr. M. Zamitch of Portugal said that hydronephrosis is of dynamic origin. It is caused by functional changes in the elimination apparatus whereby normal peristalsis becomes difficult. Hydronephrosis is classified into two groups, as the condition is caused either by pathologic dilatation of the neck of the bladder or by neuromuscular atony. In either group the symptoms are different: Patients in the first group have pain, a sensation of heaviness in the lumbar region and hematuria, whereas patients in the second group do not show renal symptoms unless infection occurs.

On the second topic, Dr. T. J. D. Lane of Ireland advised international agreement on a method to make uniform the interpretation of the results of various treatments for obstruction of the neck of the bladder. He advised transureteral resection of a prostate weighing up to 30 Gm. Retropubic prostatectomy is indicated for larger prostates. Dr. A. Lamas of Lisbon reported on his studies on urination, normal and disturbed. The middle lobe is the most frequent cause of disturbances of urination. The routes of approach to remove the obstacle are the perineal, that used in Freyer's operation, transureteral resection and Millin's retropubic operation. The operation by the perineal route is difficult, and often there are sequelae, consisting of the formation of fistulas and impotence. Freyer's operation may be followed by shock, hemorrhage and other complications. The postoperative period is long and often complicated. The use of Freyer's tube and of tamponage is not advisable. Transureteral resection is palliative and free from danger. Millin's retropubic operation provokes neither shock nor noticeable hemorrhage. The postoperative period is short. However, certain unpleasant residual disorders remain after the operation.

Dr. L. Pisani of Italy said that obstruction of the neck of the bladder is due to disturbances of the neck itself, with consequent establishment of a chronic dynamic imbalance of urination which progresses up to the establishment of retention of urine in the bladder. The treatment is surgical. Perineal prostatectomy is advised in therapy of prostatic hypertrophy in elderly patients in poor health. Transvesical prostatectomy in two stages is the necessary operation in exceptionally rare cases and in only one stage in patients with intravesically enlarged prostate who are nontoxic and not old. Endoscopic resection is indicated in cases with a small middle lobe. The retropubic operation is indicated in all other patients. Endoscopic resection is the treatment of selection in sclerosis of the neck of the bladder as well as for fibrosclerous chronic prostatitis.

Dr. S. Gil Vernet of Barcelona said that the fundamental causes of dysuria are the destruction and changes in the prostatic muscles. The mechanical obstacle is of secondary value. Surgical removal of benign tumors should be performed at the

proper time. Extreme delay results in functional renal disorders and in lowering the patient's general condition, with consequent increase of the seriousness of the operation. The surgical treatment of prostatic diseases should not be restricted to the exclusive use of a given technic or approach. Selection of the operation should be based on the anatomicopathologic lesions in the given case, the coexistence of other urogenital lesions and the results of the clinical examination of the patient. Endoscopic resection and transvesical removal are indicated, respectively, in tumors of intravesical development of small volume and of large lobes. In cases in which two lateral lobes are united by a middle lobe, the perineal route, by preference, or else the retropubic route is indicated. The transvesical route is indicated only in exceptionally rare cases of this type. The perineal route is the one of election for total prostatectomy. However, this route is contraindicated in cases with defects of the bone pelvis or of the rectum. The transvesical, or else the retropubic route, is indicated when hypertrophy of the prostate is associated with the presence of diverticula. Examination of the urinary apparatus is by means of descendent urography, whereas catheterization and endoscopic examination should be done only when necessary.

On the third topic, Dr. J. Montbaerts of Belgium discussed a form of cystalgia which is frequent in old women. The speaker designated the disease as "edematous cervicocystalgia," consisting of submucous edema and polypoid tumors. Hypothetically, this syndrome may be caused by infection, allergy or endocrine disorders. However, the actual cause is a hormonal disorder. The therapy consists of dilatation, fulguration and cervicovesical curettage. The results are not promising. Neurosurgical treatment is indicated only in rare cases.

Dr. Neuwirt of Czechoslovakia sent his article to be read at the congress. He could not be present at the congress because he did not obtain a Czechoslovakian permit to travel to Spain.

ARGENTINA

(From a Regular Correspondent)

BUENOS AIRES, Dec. 30, 1949.

Symposium on High Altitude Biology

A symposium on high altitude biology was held in Lima November 21-30 under the auspices of UNESCO and organized by the government of Peru. Generals H. G. Armstrong, Benson, Wallace Graham, Captains Behnke and Kellum and Drs. Cain, Graybiel, Fenn, Warren, Hall, Dill, Darby, Luft, Kaplan, Loveland, Scott, Eyer, Gelfan, van Liere and others from the United States attended the symposium.

Dr. Carlos Monge (Lima) was the president and Dr. Bernardo A. Houssay (Buenos Aires) scientific honorary president. The symposium was also attended by representativcs from Switzerland, Italy, France, Canada and almost all the South American countries.

Communications on respiratory function (Dr. Aste Salazar), cardiology (Dr. Rotta), hematology and blood and bile pigments (Drs. Merino and Delgade), reproduction (Dr. San Martin and Encinas) and muscular work (Dr. Hurtado) were reported and discussed. The communications from the Institute of Andean Biology of Lima were remarkably outstanding.

The participants visited the Laboratories of High Altitude Biology in Huancayo (altitude 11,000 feet), Morococha (14,500 feet) and Lima (at sea level). The small laboratory at an altitude of 16,000 feet was not visited by them. Two thirds of the Peruvian population live permanently at an altitude of 8,000 to 15,000 feet, working in agriculture, with livestock and in mines. The symposium was an important contribution to the problems related to high altitude biology.

Congress on Tuberculosis

The second Argentine Congress on Tuberculosis, under the presidency of Dr. Gumersindo Sayago, was held in Alta Gracia (Córdoba, Argentina) November 28-30. The congress was attended by 300 delegates from Argentina and other American countries.

The principal statements concerned establishment of obligatory vaccination with BCG of newly born infants and all anallergic persons. Intradermic vaccination should be practiced with 0.15 mg. of BCG and oral vaccination with only one dose of 0.10 to 0.20 mg., according to the age of the subject; periodic revaccination was advised. BCG vaccine and tuberculin for allergic tests should be prepared by a single specialized technical organization in each country.

It was reported that streptomycin is a valuable adjunct in treatment and especially effective in cases of lesions of miliary or focal exudative type. It must be employed with clinical discrimination and always in conjunction with other therapeutic methods. It has a transitory effect because of the development of streptomycin resistance in the organism.

Papers on meningeal and serous tuberculosis were also presented.

Diabetes

The seventh annual meeting of the Argentine Medical Association was held in Tandil (Argentina). The subject was diabetes; communications were reported by Dr. B. A. Houssay (physiopathology), Dr. P. Landabure (complications in diabetes), Dr. J. Puchulu (insulin treatment), Dr. C. Leoni Iparraguirre (treatment of gangrene), Dr. V. G. Foglia (experimental diabetes) and Dr. C. Martínez (sulfhydryl compounds and diabetes).

Scarcity of Medical Products

At present it is difficult to obtain medical products of foreign manufacture because importation of these products requires special licenses granted by the Central Bank of the Republic. Recently the situation was improved slightly because some types of licenses were obtained. Insulin has been one of the scarcest products, although it was manufactured in Argentina and exported to Europe during the last war.

Penicillin

Through a special agreement with the Argentine government, E. R. Squibb & Sons established in Buenos Aires an industrial center for penicillin production. Although 150,000 billions of units are produced monthly, this is not enough to cover the local needs and it is necessary to import the rest.

Adrenocorticotrophin

Recently Dr. J. Mote, medical director of Armour Research Laboratories, visited Buenos Aires and delivered some lectures on the action of pituitary adrenal corticotropic hormone on man and its therapeutic use in some diseases. The official newspapers announced that Dr. Mote had been specially invited by the "Eva Duarte de Peron Foundation."

Prize for Studies on Poliomyelitis

The Association for the Fight Against Infantile Paralysis awarded a prize of $10,000 (Argentine pesos) to Dr. Eduardo de Robertis for his investigations with the electronic microscope on the transmission of poliomyelitis and other neutrophil viruses.

First American Congress of Industrial Medicine

The first American Congress of Industrial Medicine was held in Buenos Aires; the inaugural meeting (December 1) was attended by the president of the Republic and other national authorities and by delegates from other American countries.

Correspondence

RICKETTSIALPOX

To the Editor:—In my discussion of the paper on "Rickettsialpox" by Dr. Leslie Paxton Barker (J. A. M. A. **141**: 1119 [Dec. 17] 1949) I neglected to give credit to Mr. Charles Pomerantz in regard to the discovery of the mite vector.

Mr. Pomerantz is a self taught entomologist and pest control operator. I have since learned that it was he who worked out the role of mites and mice in this new rickettsial disease. He collected the mites from the incinerators, garbage cans, walls, storage mattresses and baby carriages in buildings in the Regency Park (Kew Gardens, Queens, N. Y.) section. He took the mites to Washington, and Dr Edward W. Baker identified the specimens as Allodermanyssus sanguineus, a rodent mite. Dr. William L. Jellison, parasitologist at the Rocky Mountain Laboratory, took charge of the laboratory which was established in the Regency Park buildings by Dr. R. J. Huebner of the U. S. Public Health Service. Mr. Pomerantz assisted them in the work of collecting the mites and trapping the mice and sending them to Washington. It was from these pools of mites and mice that the Rickettsia was isolated at the U. S. Public Health Service laboratory. It was soon established that a strain of Rickettsia isolated from a patient suffering from the disease was the same.

EUGENE TRAUGOTT BERNSTEIN, M.D., New York.

To the Editor:—In the discussion of Dr. Barker's article (Rickettsialpox, J. A. M. A. **141**: 1119 [Dec. 17] 1949) Dr. Eugene Traugott Bernstein, New York, credits Dr. Morris Greenberg of the New York Health Department with the discovery of the mite vector, Allodermanyssus sanguineus, of rickettsialpox.

It is a matter of public record that a Mr. Charles Pomerantz, an exterminator, discovered the mite, as detailed in the *Archives of Dermatology & Syphilology* (**57**: 767 [April] 1948) in the report of the Bronx Dermatological Society meeting of Oct. 17, 1946, under the title "Rickettsialpox Due to Allodermanyssus Sanguineus," presented by Drs. Marion B. Sulzberger and A. A. Fisher. This was the first discussion of rickettsialpox before any medical society. Mr. Pomerantz was co-author with public health officials of an article on this subject (Huebner, R. J.; Jellison, W. L., and Pomerantz, C.: *Pub. Health Rep.* **61**: 1677, 1946). There is an interesting, factual account of the role that Mr. Pomerantz played in the discovery of the mite in the *New Yorker*, Aug. 30, 1947, called "The Alerting of Mr. Pomerantz."

A. A. FISHER, M.D., Woodside, Long Island, N. Y.

ANTIBIOTICS AND BLOOD COAGULATION

To the Editor:—In the letter of Dr. Perrin H. Long in THE JOURNAL of January 7 concerning antibiotics and blood coagulation, he justifiably points out the flimsy evidence on which the conclusion is based that the antibiotics increase the thrombotic tendency. The issue, however, goes deeper than Dr. Long has indicated. The basic question to be answered is whether the coagulation time has any reliability in indicating either a hemorrhagic or a thromboembolic tendency. One must not overlook the fact that the coagulation time is entirely empiric and totally unphysiologic. While a prolonged coagulation time denotes an abnormality in the coagulation reaction, a normal value gives no assurance that the coagulation mechanism is normal or that hemostasis is adequate. Until I developed the prothrombin consumption test (*Am. J. M. Sc.* **214**: 272 [Sept.] 1947) it was tacitly accepted that no coagulation defect was present in thrombopenic purpura because the coagulation time is usually normal or even decreased. With the new test, it could be demonstrated that the coagulation defect in thrombopenia is often as striking as in hemophilia. Likewise, before my one stage prothrombin test became available, the surgeon was repeatedly assured that the coagulation mechanism in his jaundiced patients was normal because the coagulation time was not prolonged. It was the prothrombin time which indicated why his patients bled.

The crux of the hemostatic and thromboembolic problem lies in the quantitative availability of thrombin. Favre-Gilly and I (*Am. J. Physiol.* **158**: 387 [Sept.] 1949) found that only a minute amount of prothrombin (less than 1 per cent) is converted to thrombin to effect complete clotting in a test tube. Yet it is established that a prothrombin level of 20 per cent or less induces a hemorrhagic state. This clearly shows that it is not the initial clot or the speed with which it forms that determines hemostasis. The generally accepted view that the fibrin clot serves as a hemostatic plug rests on theory and speculation and is probably erroneous. It is much more likely that a slow but constant production of thrombin in the clot causes a gradual disintegration of platelets, thereby inducing a continuous liberation of the vasoconstrictor which these cells contain. It can be postulated that the basic factor in hemostasis is the vasostrictor supplied by the platelets.

With a test that is as poorly controlled as the coagulation time, it is difficult to determine how much shortening must occur before a state of hypercoagulability exists. Since a controlled slow injection of thrombin intravenously does not produce massive thrombosis, it is difficult to see the relation of coagulability (from the point of view of speed of clotting) to thromboembolism. By none of the older tests of coagulability has it ever been possible to establish unequivocally an alteration in either the clotting factors or the speed of the reaction in the patient who had a thrombosis or pulmonary embolism. The problem furthermore has not been simplified or assisted by the introduction of such uncritical terms as hypercoagulability, hyperprothrombinemia and increased convertibility of prothrombin or by postulating accelerator factors. There is a possibility, however, that the prothrombin consumption test may perhaps bring order out of chaos in this field, just as the simple prothrombin time did in the area of the hypoprothrombinemias.

ARMAND J. QUICK, M.D., Milwaukee.

Medical Motion Pictures

FILM REVIEW

Ward Home. 16 mm., black and white, sound, showing time five minutes. Produced in 1949 by Pathescope Company of America, Incorporated, in collaboration with the New York City Department of Hospitals. Procurable on loan from Mr. Clifford Evans, New York City Director of Television and Films, 500 Park Avenue, New York 22.

This motion picture is designed to show how shortage of hospital beds can be eliminated. It portrays the methods in which the New York City health facilities are being enlarged by hospital service being brought into the home and illustrates how the patients can receive adequate care, benefits of hospitalization and attendance by resident physicians, nurses, laboratory technicians and other hospital personnel.

This production can be recommended for showing to physicians, public health personnel, hospital personnel, civic groups and those interested in the immediate care of the patient. The photography and direction are very good.

Bureau of Investigation

THE DROWN TECHNIC FAILS

A Mrs. Ruth B. Drown of Los Angeles has claimed that she can diagnose disease and treat it with devices known variously as "Drown Radio Therapy" and "Drown Radio Vision Instruments." She has also designated them as "Homo-Vibra Ray Instruments," which are, she reveals:

> ". . . based on the laws of energy and adjusted to tune into the most delicate vibrations. The Drown Radio Instruments are the most fundamentally scientific known today in the field of diagnosis, remedy selection and therapy. . . . Drown Instruments tune into the vibrations of the body for function and disease. . . . Also, the impinged nerves may be recorded, and a blood count, urinalysis, blood pressure and temperature taken on the instrument. . . . When diagnosis with the Drown Instrument is finished, the doctor has a complete and scientifically accurate blueprint of the patient's body such as can be obtained in no other way, and many obscure conditions are uncovered which otherwise would have been impossible to locate."

Mrs. Drown has failed completely in a test entered into by her voluntarily to determine her ability to diagnose pathologic conditions by means of a drop of the patient's blood, to "photograph" soft tissue and to stop hemorrhages.

Before a committee of scientists appointed by the Dean of the Division of Biological Sciences of the University of Chicago, tests were conducted in December 1949 and January 1950. University officials had been persuaded by prominent Chicagoans that Mrs. Drown was entitled to such an investigation. Terms and conditions were drawn and agreed to by both parties to the protocol. The committee's report summarized observations which serve to corroborate statements previously reported in THE JOURNAL.[1] On "diagnosis" the committee reported as follows:

> "Diagnosis by means of the Drown diagnostic machine: It is our opinion that the machine is a sort of ouija board in which the operator develops the audible end point by the amount of pressure applied to the stroking finger without any causal relationship to the position of the potentiometer dials. In the three patients that she attempted to diagnose, Mrs. Drown registered spectacular failures. It is our belief that her alleged successes rest solely on the noncritical attitude of her followers. Her technic is to find so much trouble in so many organs that usually she can say 'I told you so' when she registers an occasional lucky positive guess. In these particular tests, even this luck deserted her."

Concerning photography of soft tissue, the committee reported:

> "The alleged radio photographs: We find that the film images which have intrigued Mrs. Drown and her disciples are simple fog patterns produced by exposure of the film to white light before it has been fixed adequately. These images are significantly identical regardless of whether or not the film is placed in Mrs. Drown's machine before being submitted to the highly unorthodox processing which has been devised by her. In the numerous old films shown to us by Mrs. Drown we can see no resemblance to the anatomical structures, appliances, bacteria, etc., that Mrs. Drown professes to see. In short, it is our opinion that the so-called Drown radio photographs are mere artifacts and totally without clinical value."

As to Mrs. Drown's claimed ability to stop hemorrhage during surgical operations and at other times, the committee reported:

> "Hemorrhage control: In the opinion of all observers, including herself, Mrs. Drown failed completely to control or modify hemorrhage from the nicked femoral artery of an anesthetized dog."

Mrs. Drown has sold these instruments to chiropractors, osteopaths, naturopaths and some doctors of medicine. She also has sold a portable model for self treatment and has represented that practitioners may give "absent treatments" wherein the patient remains at home. A blotter containing a drop of the patient's blood is kept on file in the practitioner's office. By placement of the blotter in a slot in the machine in the "doctor's" office, the patient is "tuned into the machine" and pathologic conditions are thus treated.

Prior to the investigation by university personnel, it was agreed that blood specimens of 10 patients and 10 dogs would be furnished to Mrs. Drown for "diagnosis" and she was to be furnished film for the purpose of demonstrating her technic in "soft tissue" photography. Her results on 3 persons were so erroneous that no attempt was made by her to undertake demonstrations on the other 7. She gave the diagnosis for a tuberculous patient as "a type IV cancer of the left breast with spread to ovaries, uterus, pancreas, gallbladder, spleen and kidney" and said that patient was devoid of vision in her right eye and that "the blood pressure was 107/71, the ovaries were not producing ova, and that the following structures showed reduced function: pancreas, adrenal, pituitary, uterus, right ovary, parathyroid, spleen, heart, liver, gall bladder, kidneys, lungs, stomach, spinal nerves, intestines, ears, right eye."

Her diagnosis for a patient having severe hypertension and a bleeding marginal ulcer secondary to gastroenterostomy was "coronary disease with dilated pulmonary veins, diseased heart valves, and nonfunctioning gallbladder. Blood pressure 127/80." Actually it was, right arm, 218/138 on one occasion, 230/135 on another and, left arm, 220/140 on one occasion and 240/135 on another. Mrs. Drown was not given the sex of this patient, "and she concluded that there was a normal function not only of a uterus but also of a prostate. She reported low function or nonfunction in the following structures: pituitary, pulmonic and tricuspid valves, galibladder, stomach, spleen, parathyroids, pancreas, kidneys."

Her diagnosis for a healthy young man with normal blood pressure was "an ischiorectal abscess, serious trouble with the prostate, probably carcinoma with spread to urethra, pelvic bones, and with loss or at any rate nonfunction of the left testicle. The blood pressure she reported as being 166/78, and she said that the prognosis was very poor."

The 10 samples of blood drawn from laboratory animals reported on by Mrs. Drown followed the same pattern of failure. She reported on 6 of the 10 animals, on 4 of which she could get no "recording," and reports on the other 2 were meaningless.

In the hemorrhage "control" experiment, Mrs. Drown was invited to permit ligature at any time or produce a clotting with her machine. Ligature was demonstrated in the control animal. After she had permitted considerable blood to pour from the test animal, and after her friends had found the sight beyond their capacities, it was reported:

> "Eventually she asked that the vessels be ligated and then suggested that instead of hemorrhage control she now show us how she could bring the dog out of the anesthesia by means of the machine. . . ."

In 1934, while trading as the Homo-Vibra Ray Company of Los Angeles, Mrs. Drown wrote to an officer of the American Medical Association in part as follows:

> "The Homo-Vibra Ray has been in existence since December 15, 1929. It has been sold to a few doctors only to prove that others could use it as well as the inventor. So far it has been checked conscientiously by every known scientific method used in the healing art.
>
> "We feel it is worthy of a fair investigation by those whose privilege it is to do so for the medical profession and we are now making a formal request of you for this investigation. Should you find this instrument to be scientific, as we know it to be, and it meets with your approval, we wish to say to you that we would deem it a great privilege to give to the good of the cause a certain per cent royalty over a set period of time on each instrument sold, feeling that this money would be utilized for the purpose of assisting humanity, even as we feel our instrument is for that purpose.
>
> "We have not sold this instrument to any particular school of therapy because we realize it is an instrument and not a machine; therefore, being an instrument, it requires the knowledge of the operator to utilize it along with all other known methods, and without this knowledge, the instrument could not be a success.
>
> "We demonstrated it, by request, at the Homeopathic Convention in Chicago, and also at the Eclectic Convention. These people took it upon themselves to investigate us very thoroughly, and they checked our findings with as many as three laboratories on one case.

1. J. A. M. A. **116**: 888 (March 1) 1941.

"It has also been checked by the x-ray, the fluoroscope, and post mortem. We do not consider the Homo-Vibra Ray a panacea nor do we say that we cure people with it, but the diagnosis made with it permit the physician to have a better vision of his case and to utilize to the best of his knowledge the therapy in which he is proficient. . . .

"This is merely an outline of the things that the Homo-Vibra Ray is capable of determining, and a complete investigation by an open-minded investigator would prove the fact that it is definitely scientific and not hokom [sic] as so often those who do not know will attribute to it."

The reply from the Association was:

"Neither in your letter nor in your advertising matter is there given any scientific support for the claims made for the Homo-Vibra Ray device. Nor do you give information regarding its physical constants or the electrical 'hook-up.' In other words, the device seems to be surrounded with the secrecy common to all nostrums."

The Bureau's files concerning Mrs. Drown reveal that she has lived in Los Angeles for many years and formerly was employed in the electrical assembly department of the Southern California Edison Company. According to information available to the Bureau of Investigation of the American Medical Association she had become "interested in radio and its possibilities as an aid to physicians in the diagnosis of disease and attended the School of Osteopathy at Kirksville, Mo. She attended this school for about three years, but did not complete the course, although she is a member of the American Naturopathic Association. She is now a licensed osteopath and commenced her present activities in 1929, conducting a laboratory in which she continued research and developmental work, at the same time offering treatment and care to a small clinic clientele. During 1936 she devoted her efforts toward the developing of radio apparatus used in the diagnosis of human ailments and known by the name of Homo-Vibra Ray. . . ."

For the past several years Mrs. Drown has also operated a "college" in Los Angeles, where she professes to teach her unique theories. In a folder called "Bulletin—The Drown College—1948-1949" it is stated that the "college" is "dedicated to the teaching and healing of all mankind through the development of Chiropractic, Radio Therapy and Drugless Therapy." The school was described as being "incorporated in California by the Pasadena College of Chiropractic, 1922." Ruth B. Drown, the president, carried the following degrees after her name: "D.R.T., N.D., D.C."

Grief came to Mrs. Drown in August 1949, in the form of an exposure of quackery in Chicago sponsored by the Chicago *Tribune*. Mentioned therein was Myrtle Farnsworth, an osteopath, who was described as being a user of the Drown Radio Instruments. Using a Drown machine, she is reported to have given a *Tribune* reporter the diagnosis of "feverish infection, malaria, undulant fever, afternoon temperatures, weak glands in neck, bad ears, rheumatism, weak bladder, infected pancreas, infected lung (left lobe; right lobe O.K.), infected liver, possible diabetes, gas on stomach, constipation." The fee for the diagnosis was $35, according to the *Tribune* reporter, and the osteopath was reported to have given the patient "a sweet, motherly smile and two kinds of medicine. One was a tall bottle of yellow liquid labeled: 'One teaspoonful in ½ glass water before meals and at bed time.' 'That's for your feverish infection,' she explained. The other, an enormous package of bilious-green pills, was labeled: 'One or two at bed time.'" The reporter was told that these were laxatives, and she commented that at that very moment she had been mildly diarrheic for two days.

Mrs. Drown also has been the object of attention by the Federal Food and Drug Administration. An instrument which she sold to a Chicagoan for home use was the subject of a seizure which ultimately was adjudicated by a default decree of condemnation. The charges were that literature accompanying the device contained false and misleading representations with respect to the therapeutic value of the device.

Mrs. Drown's attempt to capitalize on mechanical gadgetry has been proved for what it and similar pursuits truly are—quackery. Unfortunately, much harm can be done before prospective users realize the harm in such deceptive practices.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Prenatal Injuries: Liability When Unborn Child is Viable.—This was an action for damages for the death of an unborn child allegedly due to the negligence of the defendant physician and hospital. The hospital demurred to the complaint on the ground that it did not state a cause of action in that the plaintiff did not have legal capacity to sue since plaintiff's decedent had in fact never existed as a person in being. The trial court sustained the demurrer, and the plaintiff appealed to the Supreme Court of Minnesota.

The plaintiff alleged, among other things, that at the time his wife entered the hospital her unborn child was still alive and, in the exercise of reasonable and prudent care on the part of the defendants, would have been born alive a normal and healthy child, that the defendants failed properly to attend his wife and that their failure in that regard caused the death of the undelivered child.

The question, here for determination for the first time, said the Supreme Court, is whether the special administrator of the estate of an unborn infant, which dies prior to birth as the result of another's negligence, has a cause of action on behalf of the next of kin of said unborn infant under the Minnesota wrongful death statute which provides: "When death is caused by the wrongful act or omission of any person or corporation, the personal representative of the decedent may maintain an action therefor if he might have maintained an action, had he lived, for an injury caused by the same act or omission."

A number of jurisdictions, said the Supreme Court, have followed the early case of *Dietrich v. Inhabitants of Northampton, 138 Mass. 14,* wherein the court stated: ". . . as the unborn child was a part of the mother at the time of the injury, any damage to it which was not too remote to be recovered for at all was recoverable by her . . ."

A substantial number of authorities have taken an opposite view. They have, in most instances, cited with approval the language used by Mr. Justice Boggs, who wrote the dissenting opinion in *Allaire v. St. Luke's Hospital, 184 Ill.* (359, 56 N. E. 638), wherein he stated, ". . . if . . . it [the unborn child] reaches the prenatal age of viability when the destruction of the life of the mother does not necessarily end its existence also, and when, if separated prematurely, and by artificial means, from the mother, it would be so far a matured human being as that it would live and grow, mentally and physically, as other children generally, it is but to deny a palpable fact to argue there is but one life and that the life of the mother. Medical science and skill and experience have demonstrated that at a period of gestation in advance of the period of parturition the fetus is capable of independent and separate life and that, though within the body of the mother, it is not merely a part of her body, for her body may die in all its parts and the child remain alive and capable of maintaining life. . . . If at that period a child so advanced is injured in its limbs or members and is born into the living world suffering from the effects of the injury, is it not sacrificing truth to a mere theoretical abstraction to say the injury was not to the child, but wholly to the mother . . .?"

We adhere to the principles expressed in the latter cases, said the Supreme Court, even though they may be of the minority, and hold that under the Minnesota wrongful death statute the present action will lie. The language of the statute is clear. A cause of action arises when the death is caused by the wrongful act or omission of another, and the personal representative of the decedent may maintain such action on behalf of the next of kin of decedent. It seems too plain for argument that where independent existence is possible and life is destroyed through a wrongful act a cause of action arises under the statutes cited.

The trial court's order sustaining the demurrer in favor of the hospital was therefor reversed. *Verkennes v. Corniea, 38 N. W. (2d) 838 (Minn., 1949).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations July 21. *Oral.* Philadelphia, April 23-27, Chicago, Oct. 8-11. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various locations, Feb. 16. *Oral.* Washington, April 14-16. Sec., Dr. George M. Lewis, 66 East 66th Street, New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Boston, April 13-15. San Francisco, June 21-23. The oral examinations in the subspecialties will be held at the same time and places. Asst. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, June 3 Sec., Dr. W. J. German, 789 Howard Ave., New Haven, Conn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, INC. *Oral Part II.* Atlantic City, May 21-28. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 1951. Final date for filing applications is July 1, 1950. *Practical.* Boston, May 22-26; Chicago, Oct. 2-6; West Coast, Jan. 1951. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* San Francisco, May. Chicago, October. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: Philadelphia, March 31-April 2; Cincinnati, May 5-7; San Francisco, June 30-July 2. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Oral and Written.* Boston, Aug. 26-27. Final date for filing applications is April 1. Sec., Dr. Robert L. Bennett, Georgia Warm Springs Foundation, Warm Springs, Ga.

AMERICAN BOARD OF PLASTIC SURGERY: *Oral.* May-June. Sec., Dr. Louis T. Byars, 4647 Pershing Avenue, St. Louis, Mo.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Spring Examination. Sec., Dr. F. J. Braceland, 102-110 Second Ave., S.W., Rochester, Minnesota.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, week of June 18. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various centers, Oct. 25. Final date for filing applications is July 1. Sec., Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ALASKA: * Juneau, March 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: * *Examination.* Little Rock, June 8-9. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, June 8-9. Sec., Dr. Clarence H. Young, 1415 Main Street, Little Rock.

CALIFORNIA: *Examination, Written.* Los Angeles, Feb. 27-March 2; San Francisco, June 19-22; Los Angeles, Aug. 21-24; Sacramento, Oct. 16-19. *Examination, Oral and Clinical, for Foreign Medical School Graduates.* Los Angeles, Feb. 26; San Francisco, June 18; Los Angeles, Aug. 20; San Francisco, Nov. 12. *Reciprocity, Oral Examination.* Los Angeles, Feb. 25; San Francisco, June 17; Los Angeles, Aug. 19; San Francisco, Nov. 11. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * *Reciprocity.* Denver, April 4. Final date for filing application is March 18. Sec., Dr. George H. Gillen, 831 Republic Building, Denver.

CONNECTICUT: * *Examination.* Hartford, March 14-15. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan Street, New Haven. *Homeopathic.* Derby, March 9-10. Sec., Dr. Donald A. Davis, 38 Elizabeth Street, Derby.

DELAWARE: *Examination.* Dover, July 11-13. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * *Reciprocity.* Washington, March 13. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, June 25-27. Sec., Dr. Frank D. Gray, 12 N. Rosalind Avenue, Orlando.

GEORGIA: *Examination.* Atlanta and Augusta, June. *Endorsement.* Atlanta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

GUAM: *Endorsement.* Agana, last Friday of each month. Sec., Capt. C. K. Youngkin, Dept. of Public Health, Guam, % F.P.O., San Francisco.

IDAHO: Boise, July 10. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

ILLINOIS: Chicago, April 4-6. Superintendent of Registration, Mr. Charles F. Kervin, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

IOWA: * *Examination.* Iowa City, June 12-14. Sec., Dr. M. A. Royal, 506 Fleming Building, Des Moines 19.

KANSAS: Kansas City, June 7-8. Sec., Dr. J. F. Hassig, 905 N. 7th Street, Kansas City.

KENTUCKY: *Examination.* Louisville, June 14-16. Sec., Dr. Bruce Underwood, 620 S. 3rd Street, Louisville 2.

MAINE: Portland, March 14-15. Sec., Dr. Adam P. Leighton, 192 State Street, Portland.

MARYLAND: *Examination.* Baltimore, June 20-23. Sec., Dr. Lewis P. Gundry, 1215 Cathedral Street, Baltimore 1.

MASSACHUSETTS: *Examination.* Boston, March 14-17. Sec., Dr. George L. Schadt, 413 E. State House, Boston.

MONTANA: Helena, April 3-5. Sec., Dr. Otto G. Klein, First National Bank Building, Helena.

NEBRASKA: * *Examination.* Omaha, June 5-7. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Building, Lincoln 9.

NEVADA: Carson City, May 1. Sec., Dr. George H. Ross, 112 Curry Street, Carson City.

NEW HAMPSHIRE: Concord, March 8-9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 20-23. Sec., Dr. E. S. Hallinger, 28 West State Street, Trenton.

NEW MEXICO: * Santa Fe, April 10-11. Sec., Dr. Charles J. McGoey, Coronado Building, Santa Fe.

NORTH DAKOTA: *Examination.* Grand Forks, July 5-7. *Reciprocity.* Grand Forks, July 8. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Reciprocity.* Columbus, April 3. *Examination.* Columbus, June 14-17. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OKLAHOMA: * *Examination.* Oklahoma City, June 7-8. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

PUERTO RICO: *Examination.* Santurce, March 7. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

RHODE ISLAND: * *Examination.* Providence, April 6-7. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 26-29. *Reciprocity.* First Monday of each month. Sec., Dr. N. B. Heyward, 1329 Blanding Street, Columbia.

TEXAS: * *Examination.* Austin, June 19-21. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH. *Examination.* Salt Lake City, June. Dir., Dr. Frank E. Lees, 324 State Capitol Building, Salt Lake City.

VIRGINIA: *Examination.* Richmond, June 23-24. *Endorsement.* Richmond, June 22. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WEST VIRGINIA: Charleston, April 3-5. Sec., Dr. N. H. Dyer, State Capitol, Charleston.

WISCONSIN: * Milwaukee, July 11-13. Sec., Dr. C. A. Dawson, River Falls.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Examination.* Tucson, March 21. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, May 9. Sec., Mr. L. E. Gebauer, 1002 Donaghey Building, Little Rock.

COLORADO: *Examination.* Denver, March 1-2. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Dr. Daniel L. Seckinger, 4130 E. Municipal Building, Washington.

FLORIDA: *Examination.* June 3. Sec., Mr. M. W. Emmel, University of Florida, Gainesville.

IOWA: *Examination.* Des Moines, April 11. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MINNESOTA: *Examination.* Minneapolis, April 4-5. Sec., Dr. Raymond N. Bieter, 105 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, May 2-3. Director, Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

OKLAHOMA: *Examination.* Oklahoma City, April 11. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

SOUTH DAKOTA: Vermillion, June 2-3. Sec., Dr. Gregg M. Evans, 310 E. 15th Street, Yankton.

TENNESSEE: *Examination.* Memphis, March 17-18. Sec., Dr. O. W. Hyman, 874 Union Avenue, Memphis.

TEXAS: *Examination.* Austin, April 21-22. Sec., Brother Raphael Wilson, 306 Nalle Building, Austin.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1939 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

19:93-124 (Oct.) 1949

Sulfonamides in Dermatology. H. R. Cogburn.—p. 93.
Rocky Mountain Spotted Fever: Report of Case in Shelby County. S. Shafferman.—p. 96.
Profession's Plans in Field of Public Relations. W. A. Dozier Jr. —p. 98.
Art and Science of Artificial Infant Feeding. C. K. Pitt.—p. 101.

American Journal of Clinical Pathology, Baltimore

19:899-998 (Oct.) 1949

I. Experimental Cortical Necrosis of Adrenal Gland in Monkey in Diphtheria and in Malaria with Observations on Fatal Human Infection with Plasmodium Falciparum. A. Golden and R. R. Overman.—p. 899.
II. Effect of Lipo-Adrenal Extract on Ionic Balance in Fatal Simian Malaria. R. R. Overman, A. C. Bass, A. K. Davis and A. Golden. —p. 907.
III. Cortical Necrosis of Adrenal Gland in Man: Evolution and Varieties of Acute Necrosis and Its Repair. A. Golden.—p. 918.
Sternal Marrow Studies in Hodgkin's Disease: Review of Literature and Report of 35 Cases. L. R. Limarzi and J. T. Paul.—p. 929.
Serum Lipids Following Nephrectomy and in Mercuric Chloride Poisoning. D. H. Atlas, M. M. Cash and M. M. Kirschen.—p. 962.

American Journal of Diseases of Children, Chicago

78:467-634 (Oct.) 1949

Congenital Anomalies of Esophagus Related to Esophageal Foreign Bodies. P. H. Holinger, K. C. Johnston and J. Greengard.—p. 467.
*Acute Acetylsalicylic Acid Intoxication: Report of 5 Cases with 2 Deaths. B. L. Lipman, S. O. Krasnoff and R. A. Schless.—p. 477.
Six Examples of Precocious Sexual Development: I. Studies in Diagnosis and Pathogenesis. H. P. G. Seckel, W. W. Scott and E. P. Benditt. —p. 484.
*Aplastic Anemias in Childhood: Report of Primary Idiopathic Refractory Type, with Splenectomy, in an 11 Year Old Girl. A. F. Abt.—p. 516.
Hypocalcemia in Neonatal Period: Clinical Study. K. Dodd and S. Rapoport.—p. 537.
*Encephalitis and Involvement of Basal Nuclei in Poliomyelitis. J. A. Toomey and M. K. L. Sartwell.—p. 561.
Spontaneous Pleural Effusion in Newborn Infant. D. W. Cugell and S. Scherl.—p. 569.
Mongolism in One of Twins and in Another Sibling: Report of Case. R. Warner.—p. 573.
Composition of Human Colostrum and Milk. I. G. Macy.—p. 589.

Acute Acetylsalicylic Acid Intoxication.—Lipman and co-workers report 5 cases of acetylsalicylic acid intoxication in 3 infants between the ages of 5 and 6 months, and in 2 adults aged 54 and 21. Death resulted from the ingestion of 2.56 Gm. of acetylsalicylic acid in a period of fourteen hours in 1 of the infants, and from the ingestion of 5 to 6.1 Gm. (fifteen to twenty 0.3 Gm. tablets) in a period of three hours in the adult male patient. Most of the symptoms and signs of acetylsalicylic acid poisoning are the result of damage to the brain, kidneys and liver and concomitant changes in the electrolyte balance. Hyperpnea due to the central stimulatory effect of the salicyl radical produces a respiratory loss of carbon dioxide, altering the ratio of bicarbonate to sodium bicarbonate in the direction of increased alkalinity. This is a state of respiratory alkalosis and represents the first stage of salicylate poisoning. The next stage is compensated acidosis caused by ketosis resulting from altered carbohydrate metabolism and the presence of retained acid anions in the blood and tissue fluids. The hyperpnea is due to the central effect of increased acidity of blood and tissue fluids. The final stage is decompensated acidosis, with depletion of the alkali reserve, decrease in blood p_H and failure of the respiratory center in its attempt to achieve compensation. Treatment in the early stages consists of cessation of use of the drug and gastric lavage with tap water. It is essential to give 5 or 10 per cent dextrose solutions intravenously in sufficient amounts to maintain fluid balance and provide carbohydrate. In the later stages of acidosis and ketosis, alkalinizing solutions of sixth-molar sodium lactate or 5 per cent sodium bicarbonate in sufficient amounts to correct the deficit of base should be administered. Vitamin K and ascorbic acid should be given in all cases. Oxygen is extremely useful, and blood and plasma transfusions may be essential. For adequate antipyresis or analgesia 0.09 Gm. of acetylsalicylic acid per kilogram of body weight need not be exceeded as the daily dose for infants and young children.

Aplastic Anemia.—Abt reports 1 case of primary idiopathic aplastic anemia in a Negro girl aged 11. The typical symptoms and signs of profound anemia, leukopenia, thrombopenia and hemorrhages into the skin, mucous membranes and retina were present. No evidence of past infection or poisoning could be elicited. The parents and five siblings were all normal, and none exhibited an anemic tendency. The patient's red blood cell count was a little over 1,000,000. She was under close observation for eleven months and required increasingly frequent transfusions for the first four and one-half months. The liver and spleen were enlarged. It was impossible to differentiate the condition from aleukemic leukemia, though biopsy of a cervical lymph node revealed no evidence of leukemia. An epinephrine test indicated that no extramedullary hematopoiesis had been assumed by the spleen. The patient made an uneventful recovery from splenectomy. Examination of the spleen corroborated the supposition that no extramedullary hematopoiesis had been performed by this organ. The girl gained 11 pounds (5 Kg.) in the four and one-half months following splenectomy and her condition was satisfactory until six months after the operation, at which time rapid deterioration and death occurred. Splenectomy as a palliative therapeutic measure seemed to be justified. A specimen of marrow obtained five days prior to death showed an almost normal composition with a diminished number of megakaryocytes. Necropsy revealed multiple hemorrhages throughout the body and fatty degeneration of the liver with hemosiderosis. The bone marrow was rose-yellow and consisted histologically, for the main part, of immature cells with a paucity of megakaryocytes, the chief characteristic of the disease. A marrow aspiration of a single bone does not establish a complete aplasia of the marrow of every bone in the body, as demonstrated in this case. Multiple bone marrow studies by newer technics would give a more adequate picture of the marrow function.

Encephalitis in Poliomyelitis.—Toomey and Sartwell report 1 case of poliomyelitis with encephalitis and involvement of the basal nuclei in a man aged 29. The patient had a history of several bouts of fever and chills for the past two years. His condition was diagnosed as malaria. The bouts of fever responded to antimalarial therapy. About one week before his hospitalization the patient complained of severe headache which recurred two or three times in the next few days. This was followed by high fever, chills and difficulty of urination, for which he was hospitalized. His temperature became normal, and he was discharged. Three days later there developed tremor and convulsive movements of the leg, hand and face. The patient was rehospitalized. Throughout his ten weeks in the hospital his temperature did not exceed 100 F. Vomiting occurred once. He had some motor difficulty in speech. The most striking and obvious feature in his neurologic picture was the abnormal voluntary movements consisting of rapid, irregular, gross tremors with superimposed myoclonic and choreiform movements. There were gross fasciculations of the muscles of the left shoulder girdle. The bulbar symptoms, dysarthria and dysphagia, the fluids coming through the nose, retention of the urine with overflow, obstinate constipation, somatic quasisegmental involvement of the peripheral muscles, a count of 50 cells in spinal fluid, the history of exposure in an epidemic area (Minneapolis), the results of neutralization tests and the fact that the patient had recovered from his tremors, all led to a diagnosis of an encephalobulbospinal type of poliomyelitis.

American Journal of Pathology, Ann Arbor, Mich.

25:829-1116 (Sept.) 1949

Response of Tissue to Total Body Irradiation. J. L. Tullis—p. 829.
*Pathology of Atomic Bomb Casualties. A. A. Liebow, S. Warren and E. DeCoursey.—p. 853.
Pathology of Hyperpyrexia: Observations at Autopsy in 17 Cases of Fever Therapy. I. Gore and N. H. Isaacson.—p. 1029.
Histochemical Studies on Pathogenesis of Fibrinoid. C. H. Altshuler and D. M. Angevine.—p. 1061.
Microchemical Variation of Alkaline Phosphatase Activity of Liver in Obstructive and Hepatocellular Jaundice. R. A. Kritzler and J. Beaubien.—p. 1079.
*Isolation of Mumps Virus at Autopsy. T. H. Weller and J. M. Craig.—p. 1105.

Pathology of Atomic Bomb Casualties.—A portion of the report to the Surgeons General of the Armed Forces by the Joint Commission for the Investigation of the Atomic Bomb in Japan is summarized. The report was prepared at the Army Institute of Pathology following a field study designed to obtain a detailed and accurate estimate of the types and numbers of casualties, of the mechanisms of injury and of factors in protection.

Isolation of Mumps Virus at Necropsy.—Weller and Craig isolated at necropsy from the tissues of a patient with the Sturge-Weber syndrome, pneumonia and mumps infection, an agent shown to be similar to a known strain of mumps virus in its biologic and immunologic properties. The virus was found in comparatively low concentration in suspensions of the parotid gland. It was also isolated from the pancreas and from the ovary. It could not be demonstrated in specimens of spinal fluid. Pathologic changes which could be attributed to the effect of the mumps virus were limited to the parotid gland and consisted of periductal interstitial edema, a mononuclear response in the interstitial tissues and degeneration of the ductal epithelium with a polymorphonuclear infiltration. These changes are similar to those previously described in mumps parotitis in man and in the experimentally infected monkey.

American Journal of Physiology, New York

158:327-490 (Sept.) 1949. **Partial Index**

Seasonal Changes in Thyroid Gland and Effects of Thyroidectomy in the Mallard, in Relation to Moult. E. O. Höhn.—p. 337.
Fluctuations of Serum Choline in Women. J. U. Schlegel.—p. 345.
Glycogenic Effect of Adrenal Cortical Extract. G. H. Keyes and V. C. Kelley.—p. 351.
Electrolytic Resistance of Blood Clot. H. H. Henstell.—p. 367.
Fibrin, a Factor Influencing Consumption of Prothrombin in Coagulation. A. J. Quick and J. E. Favre-Gilly.—p. 387.
Age, Body Weight and Blood Hypertensinogen. G. C. Rau.—p. 401.
Mechanism of Vascular Action of Tetraethylammonium Chloride. I. H. Page.—p. 403.
Effects of Changes in Body Temperature and Inspired Air Humidity on Lung Edema and Hemorrhage. F. J. Haddy, G. S. Campbell and M. B. Visscher.—p. 429.
Influence of Sodium Load on Sodium Excretion. D. M. Green and A. Farah.—p. 444.
Alteration of Neuron Excitability by Retrograde Degeneration. B. Campbell, V. H. Mark and E. L. Gasteiger.—p. 457.
Effect of 2-Methyl Naphthoquinone on Action Potential of Nerve and Muscle. C. Turda and H. G. Wolff.—p. 465.
Muscle Recovery After Nerve Section and Suture. G. C. Knowlton.—p. 470.
Effect of Carbon Dioxide on Brain Glucose, Lactate, Pyruvate and Phosphates. J. A. Bain and J. R. Klein.—p. 478.

Annals of Internal Medicine, Lancaster, Pa.

31:389-544 (Sept.) 1949

Pheochromocytoma: Diagnosis and Treatment. G. F. Cahill and H. Aranow Jr.—p. 389.
Prognosis and Treatment of Hepatic Insufficiency. C. J. Watson.—p. 405.
Prefrontal Operations for Treatment of Mental Illness. J. L. Pool.—p. 424.
Studies on Coronary Circulation. VI. Loss of Myocardial Contractility After Coronary Artery Occlusion. M. Prinzmetal, L. L. Schwartz, E. Corday and others.—p. 429.
Id.: VII. Remarkable Reserve Power of Heart. E. Corday, R. Spritzler and M. Prinzmetal.—p. 450.
Unipolar Extremity Leads in Records with Large Qs. H. J. Lowen and H. E. B. Pardee.—p. 456.
Immunologic Types of Blastomycosis: Report on 40 Cases. D. T. Smith.—p. 463.
Superior Vena Cava Obstruction in Primary Cancer of Lung. S. E. Rosenbloom.—p. 470.
Incidence of Hypertension in Portal Cirrhosis: Study of 80 Necropsied Cases of Portal Cirrhosis. S. D. Spatt and P. Rosenblatt.—p. 479.
Clinical Entity. O. E. Guttentag.—p. 484.

Archives of Neurology and Psychiatry, Chicago

62:383-526 (Oct.) 1949

Chronic Pachymeningitis: Report of Case and Review of Literature. H. C. Naffziger and W. E. Stern.—p. 383.
Brain Wave Patterns During Hypnosis, Hypnotic Sleep and Normal Sleep. W. Barker and S. Burgwin.—p. 412.
*Peripheral Nerve and Root Disturbances Following Vaccination Against Smallpox: Study of 5 Cases, Review of Literature and Discussion of Related Entities. N. W. Winkelman Jr.—p. 421.
Multiple Metastatic Abscesses of Brain. L. T. Furlow.—p. 439.
*Recurrent Hypertensive Cerebral Thrombosis: Clinicopathologic Analysis of 6 Cases with Discussion of Pathogenesis. L. Goodman.—p. 445.
Technic of Cortical Excision: Experimental Study of Postoperative Cicatrization. H. F. Steelman.—p. 479.
Late Changes in Brain Stem Following Trigeminal Tractotomy. C. A. Erskine and G. F. Rowbotham.—p. 493.

Peripheral Nerve and Root Disturbances Following Vaccination.—According to Winkelman complications from smallpox vaccination have been reported for generations and have included urticarial and erythematous rashes, generalized vaccinia, local ulceration, lymph node abscesses, gangrene, tetanus, nephritis, purpura, encephalitis, myelitis and peripheral neuritis. There were reported over 700 cases of postvaccinal encephalitis, but only 7 instances of postvaccinal "neuritis." Winkelman reports 5 cases of disturbances of peripheral nerves and roots, result of the mass smallpox vaccination program in New York city in March and April 1947, during which period approximately 6,350,000 persons were immunized. Four of the 5 patients were male. The site of involvement was independent of the area of inoculation. The incubation period varied from seven to fourteen days. There was a hyperacute onset with severe sharp pain in the shoulder in 4 patients and paresthesias in 1. There was a primary involvement of fibers from the fifth and sixth cervical nerves in 4 patients, and a peripheral polyneuropathy in 1. The patients showed weakness after one to four days. There was no history of alcoholic intake, dietary inadequacy or exposure to toxic agents. There was muscle tenderness, decreased tone, decreased to absent deep reflexes, atrophy and paresis. Four patients showed objective, and all showed subjective, sensory disturbances. Results of laboratory studies were within normal limits. Four patients showed denervation by electrical studies. All received vitamin therapy and physical therapy, and all had recovered in four months. Sensory improvement was noted earlier than the motor improvement and tended to be more nearly complete. One patient retained a mild contracture of the pectoral muscles. Physical therapy is essential in preventing such sequelae as contractures. The postvaccinal disturbances of peripheral nerves and roots probably belong in the same group as the serum neuritides. The postvaccinal neuritides seem also to be related to neuritides associated with sulfonamide and penicillin therapy and perhaps with periarteritis nodosa, in all of which allergy plays an important role.

Recurrent Hypertensive Cerebral Thrombosis.—Goodman reports on a group of hypertensive patients with predominantly cerebral symptoms. The illness is frequently not recognized or is incorrectly diagnosed. Goodman supports the thesis of Alvarez that the syndrome constitutes a nosologic entity. Goodman presents a clinicopathologic analysis of 6 cases. The average age at onset was 40 years. The average span of life after the onset of symptoms was 11.4 years, but 1 patient lived for thirty-one years. The average systolic blood pressure was 223 mm. of mercury, and the average diastolic was 123 mm. of mercury. Persistent major psychotic symptoms tended to occur late in the disease, and their appearance was always a sign of a grave prognosis. The essential pathologic change resided in the small vessels of the brain, chiefly in the arterioles and capillaries. The large cerebral arteries were seldom extensively affected. Renal arteriolar disease was generally less severe than cerebral arteriolar disease. Cardiac lesions were relatively mild. Examination of endocrine organs, including the hypophysis, thyroid and adrenal glands and the pancreas, in 5 cases failed to reveal changes which could be linked causally with the hypertension. A tiny pituitary adenoma was found in 1 case. The basic pathogenic mechanisms are considered to be recurrent cerebral vasospasm, progressive arteriolar sclerotic degenerative changes with intramural and perivascular hemorrhages, arteriolar and

venular thromboses and cerebral ischemia and edema. The term recurrent hypertensive cerebral thrombosis is suggested as the proper clinicopathologic designation of the syndrome.

Archives of Surgery, Chicago

59:807-992 (Oct.) 1949

Retrograde Spread of Carcinoma in Rectum and Rectosigmoid. J. F. Connell Jr. and A. Rottino.—p. 807.
*Early and Delayed Clinical Effects of Vagotomy for Peptic Ulcer. C. S. Kipen and G. A. Stevens.—p. 814.
Intravenous Administration of Procaine Hydrochloride for Painful Prolapsed Hemorrhoids. B. Schaff and J. G. Spendlove.—p. 825.
*Treatment of Cancer of Breast by Simple Mastectomy and Roentgenotherapy. R. McWhirter.—p. 830.
Anesthesia in Traumatic Conditions. F. F. Foldes.—p. 843.
Short Radius. H. Milch.—p. 856.
Use of Skin Grafts in Repair of Cleft Palate to Improve Speech. H Baxter, J. Drummond and M. Entin.—p. 870.
Contusions of Lung from Nonpenetrating Injuries to Thorax. W. C. Sealy.—p. 882.
Technic for Arthrodesis of Hip when Femoral Head and Neck are Absent. L. L. Wiltse and W. A. L. Thompson.—p. 888.
*Relief of Chronic Hypertension by Excision of Pheochromocytoma. F. M. Owens Jr.—p. 896.
Drill Perforation, Simplified Method for Ventricular Puncture. T. C. Erickson and H. M. Suckle.—p. 903.
Xanthomatous Giant Cell Tumors Arising in Soft Tissue: Report of Instance of Malignant Growth. M. W. Kobak and S. Perlow. —p. 909.
*Granulomas of Large Size Caused by Implantation of Talcum (Talcum Sarcoids). G. E. Gruenfeld.—p. 917.
Pseudocyst of Liver: Report of Case. E. J. Poth and A. W. Deloach.—p. 925.
Islet Cell Tumor of Pancreas. F. H. Amendola.—p. 928.
Granulomas of Ileocecal Region Secondary to Appendicitis (Ligneous Cecitis) Which Stimulate Neoplasms. J. W. Wilson, M. B. Dockerty, J. M. Waugh and J. A. Barpen.—p. 933.
Progress in Orthopedic Surgery for 1946: XVII. Infantile Paralysis: Research. J. A. Toomey.—p. 957.
Id.: XVIII. Neuromuscular Disorders Exclusive of Poliomyelitis. W. M. Phelps and R. A. Knight.—p. 970.

Vagotomy for Peptic Ulcer.—Kipen and Stevens performed vagus resection for peptic ulcer in 42 patients, all men, from 20 to 68 years of age. One or more of the indications for surgical intervention were present in all of the patients. The average duration of symptoms was 11.2 years. Recurrent or intractable pain was a prominent feature in the majority of these patients; hemorrhage was present in 16 and obstruction in 8. The 24 patients who had undergone previous operations included 15 with perforation treated by simple closure, 7 who had undergone gastroenterostomy and 3 who had been subjected to partial gastrectomy. Four patients had undergone multiple operative procedures. Transthoracic vagus resection was done in 9 cases, abdominal vagotomy alone in 13, vagotomy plus gastroenterostomy in 14 and vagotomy plus subtotal gastric resection in 6. One operative death occurred which was attributable to mediastinitis following a perforation of the esophagus in an attempt to isolate the vagi subdiaphragmatically. In 39 of the remaining 41 patients relief of pain was obtained. Twenty-two patients had a benign postoperative course, with no evidence of gastrointestinal atony, sphincter achalasia or diarrhea, and no subjective complaints. These patients were able to leave the hospital symptom free on an unrestricted diet. The remaining patients had symptoms of impaired gastric motility or other untoward complications. Patients for whom at least three months had elapsed since the operation were requested to return to the hospital for examination or to reply to a questionnaire. A total of 25 patients were studied. Satisfactory subjective results were obtained in 21 of these, although 3 of the 10 patients who underwent vagotomy alone had severe gastric atony as long as ten months postoperatively. The degree of subjective improvement was more striking and the incidence of complications was reduced when complementary gastroenterostomy or gastric resection was done. Best results were obtained in patients in whom vagotomy was combined with gastric resection. The results of vagotomy thus far reported in the literature are not as consistently good as those reported for conventional gastric resection.

Treatment of Cancer of Breast.—McWhirter feels that publication of the results of selected cases has greatly confused the issue and has tended to convey the impression that radical mastectomy is a highly successful method of treatment of cancer of the breast. When radical mastectomy is the only method of treatment available and when all patients coming to a large general hospital are taken into account, the five year survival rate is unlikely to exceed 25 per cent. He reports results of treatment by simple mastectomy and roentgenotherapy. The five year survival rate for all cases coming to the Royal Infirmary in the period 1941 to 1945 was 43.7 per cent. The most important feature of this method is the substitution of roentgenotherapy for surgical intervention in the treatment of the axilla. The decision to do so was taken because when the axilla is not involved by malignant cells it appears unnecessary to carry out an axillary dissection and when the axilla is involved the results of surgical dissection are poor. The fact that a five year survival rate of 29 per cent was obtained in the advanced cases without distant metastases indicates that roentgenotherapy, even in such adverse circumstances, is an effective method of treating the axilla. The same therapy in operable cases is associated with a survival rate much higher than that obtained by radical mastectomy. A high standard of roentgenotherapy is essential, and adequate dosage must be given.

Relief of Chronic Hypertension by Excision of Pheochromocytoma.—According to Owens a woman, aged 25, with a palpable abdominal tumor, hypertension and a history of attacks suggestive of paroxysmal hypertension, was subjected to an intra-abdominal exploratory laparotomy which revealed a tumor mass on the left side of the abdomen in the retroperitoneal tissues overlying the left lumbar sympathetic chain just medial to the ligament of Treitz and the left side of the aorta. The mass was approximately 6 cm. in diameter and had a firm capsule. Numerous nerve fibers ran into the posterior aspect of the tumor mass from the left lumbar sympathetic chain. During the manipulation of the tumor the blood pressure and pulse rate steadily increased. As the main pedicle was clamped the blood pressure fell precipitously. The tumor was removed and the patient discharged twelve days postoperatively. The impression gained from the microscopic examination of the tumor was that of a characteristic benign pheochromocytoma or chromaffin tumor of sympathetic neural origin arising in the abnormal sympathetic chain. From the intense chromaffinity, one would expect a high content of epinephrine. The extra-adrenal location of the tumor emphasizes that exploration of the adrenals may not reveal the tumor. Tests for epinephrine-producing tumors can be utilized to advantage in the study of a hypertensive patient.

Granulomas Caused by Implantation of Talcum.—Gruenfeld cites a young woman, aged 21, who noticed a painless swelling grown to conspicuous size in the right lower region of the abdomen. She had undergone eleven years previously an appendectomy, for which a short McBurney incision was used. The operative scar was normal. The tumor developed beneath the scar, in the deeper layers of the abdominal wall. This was considerably elevated by the nodular mass, which measured approximately 12 by 5 cm. The mass was excised with the diagnosis of granuloma or sarcoma. The specimen presented a uniformly hard induration diffusely originating from the aponeurotic layer but distinctly outlined against the subcutis, into which it projected with nodular prominences. The configuration and consistency of the tumor suggested a sarcoma. Microscopic examination suggested a foreign body granuloma. Examination of sections of the tumor with a polarizing microscope indicated a foreign body reaction due to talcum. The talcum sarcoid observed clinically has a lag period, frequently covering years, and once started may exhibit progressive tendencies.

Bulletin of the Los Angeles Neurological Society

14:119-192 (Sept.) 1949

Effect of Certain Lesions of Brain on Electroencephalographic Wave Patterns: Preliminary Study. C. B. Courville.—p. 119.
Analysis of Electroencephalographic Findings in 40 Cases of Verified Brain Tumor: III. Electroencephalographic Findings in Metastatic Tumors of Brain. H. M. Cuneo, C. W. Rand and H. Sjaardema. —p. 149.
Electroencephalographic Findings in Subdural Hemorrhage and Hematoma: Review of Literature and Report of 13 Cases. C. Marsh, G. D. Hjartarson and C. B. Courville.—p. 163.
Bulbar Syndrome Following Non-Diphtheritic Throat Infections: Report of 2 Cases, 1 with Albumino-Cytologic Dissociation. D. F. Johnson.—p. 182.

Cincinnati Journal of Medicine

30:475-530 (Sept.) 1949

Social Science in Relation to Medicine and Some of Its Recent Contributions. E. Lindemann.—p. 475.
Critique of Present Status of Psychotherapies. R. P. Knight.—p. 482.

Journal of Allergy, St. Louis

20:311-392 (Sept.) 1949

Vegetable Gums by Ingestion in Etiology of Allergic Disorders. H. H. Gelfand.—p. 311.
Vital Capacity Studies to Differentiate Types of Bronchial Asthma. S. W. Jennes.—p. 322.
Evaluation of Radium Treatment to Nasopharynx in Asthmatic Children. V. L. Cohen and W. J. Fisher.—p. 328.
Bronchoscopic Therapy in Allergic Asthma. G. L. Waldbott.—p. 335.
Effects of Antihistaminic Drugs upon Excretion of Ascorbic Acid by Rats. E. S. West and R. D. Peterson.—p. 344.
Local Inhibition of Histamine Flare in Man: Method of Bioassay of Antihistamine Drugs. H. B. Lovejoy, S. M. Feinberg and E. A. Canterbury.—p. 350.
Quantitative Studies in Skin Testing: IV. Volume-Response Relationship. B. Z. Rappaport and E. L. Becker.—p. 358.
Spirometric Evaluation of Orthoxine in Bronchial Asthma. E. C. Roy, J. H. Seabury and L. E. Johns Jr.—p. 364.
Fatal Anaphylactic Shock Following Administration of Protein Digest (Amigen): Case Report. W. R. Coppinger and M. G. Goldner. —p. 369.
Failure of Ragweed Pollen Extract to Destroy White Cells from Ragweed-Sensitive Patients. W. Franklin and F. C. Lowell.—p. 375.
Influence of Temperature Variations and Winds Aloft on Distribution of Pollens and Molds in Upper Atmosphere. H. A. Heise and E. R. Heise.—p. 378.
Symptoms of Hay Fever Caused by Algae. H. A. Heise.—p. 383.
Dye Incorporating Rapid Permanent Pollen Mounting Method. J. E. Newland—p. 386.

Journal of Clin. Endocrinology, Springfield, Ill.

9:795-912 (Sept.) 1949

Excretion of 17-Ketosteroids in Idiopathic Hirsutism. P. Koets.—p. 795.
Antithyroid Action of 5-Iodothiouracil, 6-Methyl-5-Iodothiouracil, Thiocytosine and (Ca) 4-n-Propyl-6-Oxypyrimidyl-2-Mercaptoacetic Acid. R. H. Williams, B. T. Towerly, W. F. Rogers Jr. and others—p. 801.
Retarded Absorption of Pellets of Protamine-Zinc Insulin. L. Vargas and O. Koref.—p. 818.
Behavior of Labeled Iodocasein in Human Myxedema. C. F. Hamilton, A. Albert, M. H. Power and others.—p. 828.
Comparative Value and Accuracy of Measurements of Urinary I^{131} by Beta and by Gamma Ray Counting. A. S. Freedberg, R. Buka and M. J. McManus.—p. 841.
Urinary Pregnanediol Determination as Test of Pregnancy. E. M. Semmons and E. W. McHenry.—p. 852.
Pseudohypoparathyroidism: Report of Case with Late Manifestations. S. B. Alexander and H. St. G. Tucker Jr.—p. 862.
Cellular Involution in Thyroid Gland: Significance of Hürthle Cells in Myxedema, Exhaustion Atrophy, Hashimoto's Disease and Reactions to Irradiation, Thiouracil Therapy and Subtotal Resection. N. B. Friedman.—p. 874.
*Myxedema Circumscriptum Thyrotoxicum: Report of 2 Cases and Remarks on Its Pathogenesis and Treatment. X. Vilanova and J. M. Cañadell.—p. 883.
*Generalized Insulin Allergy. H. H. Stone, J. J. Frankel and L. A. Baker.—p. 895.
Goitrogens in Thyrotoxicosis Complicating Pregnancy: Case Report. R. Caren.—p. 903.

Myxedema Circumscriptum Thyrotoxicum.—Vilanova and Cañadell report 2 cases of circumscribed thyrotoxic myxedema in 2 women aged 20 and 42 with typical diffuse toxic goiter. In the first patient cutaneous infiltration patches appeared in the pretibial region of both legs after two years of the disease during a phase of spontaneous partial remission of the thyrotoxicosis and coincided with the development of the exophthalmos. In the second patient the circumscribed myxedema appeared in the pretibial region of both legs at the beginning of a recurrence of the thyrotoxicosis after treatment with thiouracil. The basal metabolic rate in the first patient was plus 12 per cent and in the second plus 34 per cent. The first patient was given 2 mg. of estradiol benzoate daily for one month before subtotal thyroidectomy was performed. Daily treatment with this drug was continued after the thyroidectomy in courses of three weeks' duration followed by a premenstrual interval of therapeutic rest. The basal metabolic rate one month after the operation was maintained at minus 17 per cent, the cutaneous patches had been considerably reduced and the exophthalmos was less intense. Cutaneous biopsy showed an edematous zone which divided the corium into two layers. The histologic lesion with its specific topography and structure seems to be characteristic of this disorder. The second patient was treated with 0.5 mg. of diethylstilbestrol and 20 drops of strong iodine solution daily. The cutaneous infiltration was not influenced. In addition, the patient was given 2 mg. of estradiol benzoate daily during the intermenstrual cycles. After three months of treatment she presented a small pretibial infiltration on the left leg, her exophthalmos had almost completely disappeared, she was free from hyperthyroid symptoms and her basal metabolic rate was minus 7 per cent. Circumscribed myxedema is a cutaneous lesion which, like malignant exophthalmos, is apparently caused by high production of pituitary thyrotropic hormone.

Generalized Insulin Allergy.—Stone and co-workers report the incidence of generalized allergy to insulin in a woman aged 53 and a man aged 24, observed among 2,949 diabetic patients admitted in the last eight years to Hines Hospital, Illinois, for the treatment of diabetes mellitus. The literature on the subject indicates that a generalized reaction develops in approximately 1 of every 1,000 persons using insulin. The importance of attempting to desensitize such patients rather than relying on dietary control is emphasized, because subsequent development of diabetic acidosis in the patient who is allergic to insulin may deprive him of the one therapeutic agent which could save his life. The first patient was desensitized by giving her 1/5 unit of crystalline zinc insulin well diluted with distilled water three times daily. This dose was doubled every three days until she could tolerate 13 units three times daily without reaction. The second patient was desensitized according to Bayer's method, which consists in intracutaneous injection, starting with 1/1,000 unit of insulin and doubling the dose every fifteen to thirty minutes as rapidly as the patient will tolerate it without allergic reaction, until a dose of 1 unit is reached. The advent of antihistaminic drug enables one to control more readily the patient's symptoms during the process of desensitization. The importance of continued daily administration of insulin to prevent a lapse in the desensitized state is emphasized.

Journal of Immunology, Baltimore

63:1-116 (Sept.) 1949

Quantitative Studies on Origin and Characteristics of Streptomycin-Fast Variants of Klebsiella Pneumoniae. M. Meads and N. M. Haslam.—p. 1.
Effect of Age upon Susceptibility to Infection with Influenza Virus. S. S. Kalter.—p. 17.
Pathogenesis of Tetanus: IV. Pathogenesis of Local Tetanus in Dog and Cat. U. Friedemann and F. B. Traub.—p. 23.
Host Growth and Its Relation to Influenzal Virus Infection. S. S. Kalter.—p. 29.
Antihemagglutinating and Neutralizing Factors Against Newcastle Disease Virus (NDV) Occurring in Sera of Patients Convalescent from Mumps. L. Kilham, E. Jungherr and R. E. Luginbuhl.—p. 37.
Occurrence of Antibodies for Pneumococcus Type II in Serum of Normal Rabbits. J. Munoz and F. E. Holford.—p. 51.
Immunologic Reactivity of Bovine Serum Albumin Labelled with Trace Amounts of Radioactive Iodine (I^{131}). H. N. Eisen and A. S. Keston. —p. 71.
Multiplication of Pneumonia Virus of Mice (PVM) in Rabbit Lung and Demonstration of Hemagglutinating Component in Lung Suspensions from Normal Animals. F. M. Davenport.—p. 81.
Purification, p_H Stability and Sedimentation Properties of Tr Bacteriophage of Escherichia Coli. G. P. Kerby, R. A. Gowdy, E. S. Dillon and others.—p. 93.
Studies on Chemotherapy of Virus Infections: I. General Anesthetics and Other Drugs Ineffective Against Experimental Virus Infections in Mice. M. Schaeffer, F. F. Silver and C. C. Pi.—p. 109.

Journal of Nutrition, Philadelphia

38:405-548 (Aug.) 1949. Partial Index

Relative to Egg Biological Values and Replacement Values of Some Cereal Proteins in Human Subjects. L. C. Clark, H. Ryer and J. R. Murlin.—p. 405.
Improving Nutritive Value of Flour: III. Use of Enriched and Non-Enriched Flour in Diets Similar to Those Consumed by Certain Low-Income Groups in South Carolina. B. D. Westerman, D. R. Lim, F. Templeton and R. I. Wells.—p. 421.
Riboflavin Metabolism of Young Women on Self-Selected Diets. J. N. Harris and F. I. Scoular.—p. 435.
Nutrition Studies During Pregnancy: V. Relation of Maternal Nutrition to Condition of Infant at Birth: Study of Siblings. B. S. Burke, S. S. Stevenson, J. Worcester and H. C. Stuart.—p. 453.
Iron Metabolism of Young Women on Two Levels of Intake. F. A. Johnston, R. Frenchman and E. D. Boroughs.—p. 479.
Nutritive Value of Cod Roe and Cod Liver. H. Kringstad and S. Felvord.—p. 489.
Net Protein and Growth-Promoting Values of Three Different Types of Yeast Prepared Under Identical Conditions. J. A. Goyco and C. F. Asenjo.—p. 517.
Essential Amino Acid Contents of Several Vegetables. A. R. Kemmerer and R. Acosta.—p. 527.
Paradoxical Relationship Between Serum Level and Liver Content of Vitamin A. R. F. Krause.—p. 535.

Kansas Medical Journal, Topeka

50:425-472 (Sept.) 1949

Physical Examination. H. M. Winans.—p. 425.
Comparative Study of Neo-Natal Infant Mortality at St. Francis Hospital, Wichita, Kansas. J. W. Dennis.—p. 428.
Diagnosis of Vaginal Bleeding. H. C. Clark.—p. 433.
Chylous Cyst of Mesentery. J. A. Howell.—p. 436.

50:473-528 (Oct.) 1949

Ulcerative Colitis: Medical and Surgical Problem. T. T. Mackie.—p. 473.
Saddle Block Anesthesia in Obstetrics. R. L. Newman.—p. 477.
Reiter's Syndrome: Case Report. R. P. Norris.—p. 480.
Principles of Early Management of Hand Injuries. Prepared by American College of Surgeons.—p. 485.

Medicine, Baltimore

28:239-332 (Sept.) 1949

Phagocytosis. L. J. Berry and T. D. Spies.—p. 239.
Course of Cirrhosis of Liver in Patients Treated with Large Doses of Liver Extract Intravenously: Study of 112 Cases: 44 Control Cases, 68 Cases Treated with Liver Extract Intravenously. E. P. Ralli, S. H. Leslie, G. H. Stueck Jr. and others.—p. 301.

New England Journal of Medicine, Boston

241:473-510 (Sept. 29) 1949

Combined Medical and Surgical Management of Upper Gastrointestinal Hemorrhage. T. A. Warthin, R. Warren and E. G. Wissing.—p. 473.
*Brill's Disease: Report of 3 Cases with Aureomycin Treatment in 2. N. Blumberg, J. C. Doane and L. B. Weiss.—p. 479.
*Artane in Treatment of Parkinson's Disease: Report of Its Effectiveness Alone and in Combination with Benadryl and Parpanit. R. S. Schwab and W. R. Tillmann.—p. 483.
Abdominal Pain in Hemochromatosis. G. Desforges.—p. 485.
Laboratory Data in Clinical Medicine: Units of Measure, Costs and Quantitative Significance of Results. T. H. Ham.—p. 488.
Malignant Lymphoma, Hodgkin's Type, Involving Lymph Nodes Only. Amyloidosis of Liver, Adrenal Glands and Especially of Kidneys and Lymph Nodes. Amyloid Nephrosis (with Uremia).—p. 497.
Pulmonary Embolism, Massive, Acute. Mural Thrombi, Both Auricles. Endocarditis: Chronic Active Rheumatic, Mitral and Aortic, with Mitral Stenosis.—p. 500.

Aureomycin in Brill's Disease.—A mild sporadic variety of typhus was reported in 1898 by Brill in New York. Zinsser in 1934 reviewed the subject and suggested that patients who had once lived in an area where an epidemic of typhus had occurred and in whom clinical symptoms resembling typhus developed later were manifesting an exacerbation of a long-dormant typhus infection. Blumberg and associates report 3 patients, all of whom were born in Russia and were admitted to the hospital with fever of undetermined origin. Subsequent study established the diagnosis of Brill's disease. The first of these patients was treated conservatively, but the other 2, in whom the Rickettsia prowazeki was isolated, were treated with aureomycin by mouth. There was prompt clinical improvement. The authors believe that early diagnosis of Brill's disease with prompt administration of aureomycin leads to a dramatic remission within forty-eight hours.

Trihexyphenidyl (Artane®) in Treatment of Parkinson's Disease.—Schwab and Tillmann report on trihexyphenidyl (artane®, a newly synthesized drug), which they administered to 44 patients with Parkinson's disease. The drug is 3-(1 piperidyl)-1-phenyl-1-cyclohexyl-1-propanol hydrochloride. The authors found trihexyphenidyl effective in different dosages. Overdosage produces giddiness, dryness of mouth, blurring of vision and headache. The initial dose is half a tablet, or 1 mg., four times a day. This is gradually increased until the patient is taking 3 mg. five times a day as a high level. The average is 2 mg. five times a day. Of 44 patients who had received this drug for over three months, only 7 were relieved sufficiently, as compared to their status on atropine therapy, to continue on trihexyphenidyl alone. Nine required the addition of panparnit (formerly parpanit, diethylaminoethyl-1-phenylcyclopentane-1-carboxylate hydrochloride) and 7 were best regulated on a combination of trihexyphenidyl and diphenhydramine (benadryl®). Six others fared best on atropine drugs and trihexyphenidyl. Twenty-nine, or two thirds, were 20 to 30 per cent better after such regulation with trihexyphenidyl than with the medicaments previously given. Seven were no better, and 8 could not tolerate trihexyphenidyl alone or in combination with other agents. The drug was therefore a failure in one third of the cases.

New Orleans Medical and Surgical Journal

102:97-158 (Sept.) 1949

SYMPOSIUM ON SURGERY OF TRAUMA
Management of Acute Head Injuries. D. H. Echols.—p. 97.
Early Management of Injuries of Chest. F. J. Phillips and W. W. McCook.—p. 101.
Nonpenetrating Injuries of Abdomen. C. J. Miangolarra and C. C. Craighead.—p. 104.
Principles of Emergency Splinting, Traction and Immobilization of Fractures. R. H. Alldredge and T. E. Banks.—p. 112.
Traumatic Shock. H. C. Ilgenfritz.—p. 119.
Modern Advances in Diabetes Mellitus. F. W. Pickell.—p. 125.
Evaluation of Use of Various Insulin Preparations in Diabetes Mellitus. S. B. Stern Jr.—p. 132.

Oklahoma State Medical Assn. Jour., Oklahoma City

42:373-422 (Sept.) 1949

Technical Procedures in Management of Diseases Involving Sinuses. C. D. Blassingame.—p. 376.
Management of Your Patients with Eye Problems. D. V. Crane.—p. 379.
Congenital Anomalies of Eyes. F. D. Switzer.—p. 381.
Management of Anuria. C. B. Dawson.—p. 383.

Pennsylvania Medical Journal, Harrisburg

52:1321-1432 (Sept.) 1949

Choice of Cases for Uretero-Intestinal Anastomosis. S. A. Beisler, L. A. Hallock and J. C. Stockman.—p. 1345.
Surgical Treatment of Hypertension: Present Concepts. M. M. Peet and R. C. Bassett.—p. 1350.
Pediatric Education and the Practicing Physician. J. M. Mitchell.—p. 1354.
Roentgen Findings in Injuries of Wrist. J. T. Farrell Jr., B. L. Williams and M. A. Cinquino.—p. 1359.
Short History of Psychiatry and Neurology in Pennsylvania. E. D. Bond and B. J. Alpers.—p. 1362.
Inoperability Versus Incurability in Tumor Management. S. G. Castigliano.—p. 1364.
Onchocerciasis in America. L. P. Glover.—p. 1371.

Philippine Journal of Surgery, Manila

4:123-196 (May-June) 1949. **Partial Index**

Arthroplasty (Early Evaluation of Results with Case Presentation). J. V. De los Santos and B. Tamesis.—p. 123.
Thoracic Injuries. O. P. Jacinto.—p. 158.
Surgery of Cleft Palate. J. Laico and M. Torres Jr.—p. 168.
*Further Observations on Immediate Ambulation in Surgery. R. Altavas, J. M. Lucas and J. R. Tan.—p. 175.
Use of Hyperbaric Solutions in Spinal Anesthesia. L. Salas, V. Mañagas and H. Bañueles.—p. 178.

Immediate Ambulation After Appendectomy.—Altavas and co-workers define immediate ambulation as having the patient walk after the last stitch has been placed and the operative field properly dressed. They review observations on 412 appendectomized patients who walked from the operating table to their beds. Some patients were given assistance from the reclining to the standing position. The greatest majority were able to stand and walk without any assistance. All were observed to be hesitant about taking the first steps, but they continued walking when reassured. There was rapid mental and physical rehabilitation; catheterization was rendered unnecessary, and narcotics except in a few cases were avoided; purgation and enemas were given to only 25 of the 412 patients. The psychologic benefits were great. The majority of the patients got up to micturate and moved their bowels in the toilet unassisted as early as the second day after operation; coupled with deep breathing exercises, voluntary coughing and turning on the sides freely, this diminished the need for nursing attention and the possibility of pulmonary congestion, embolism and bronchitis. Stitches were removed on the fourth day, and after that the patients were discharged. No wound disruption, eventration or dehiscence was observed; no patient returned for late postoperative hernia, no wound sepsis was recorded. However, some problems were not eliminated by immediate ambulation, such as postoperative wound pain with insomnia during the first postoperative night, and the postoperative gas pains. These were counteracted by suitable measures. The authors believe that the benefits derived from immediate ambulation will encourage its adoption as a routine procedure.

Psychiatric Quarterly, Utica, N. Y.

23:415-616 (July) 1949. **Partial Index**

Group Psychotherapy as Aid to Out-Patient Treatment in Psychiatric Clinic. L. Wender and A. Stein.—p. 415.
Program of Group Psychotherapy in Treatment of Chronic Mental Illness. J. J. Geller.—p. 423.
Schizophreniform Psychosis with Pernicious Anemia—Case Report. J. H. Friedlander and A. E. Dagradi.—p. 444.
Physiology of Hypnosis: II. Review of Literature. B. E. Gorton. —p. 457.
Consideration of Acute Schizophrenic Episode. G. J. Taylor.—p. 530.

Public Health Reports, Washington, D. C.

64:1195-1222 (Sept. 23) 1949

Determination of Specific Gravity of Ragweed Pollen (Ambrosia Elatior) and Conversion of Gravity Sample Counts to Volumetric Incidence. J. H. Crawford.—p. 1195.
Estimation of Chronic Disease Prevalence with Particular Reference to Syphilis. H. A. Kahn and H. B. Smith.—p. 1201.
Snap Traps Versus Cage Traps in Plague Surveillance. B. Gross and D. D. Bonnet.—p. 1214.

64:1223-1246 (Sept. 30) 1949

Effects of Reservoir Operation on Stream Water Quality. R. L. Woodward and M. LeBosquet Jr.—p. 1223.
Incidence of Q Fever in Eastern Washington—Serological Survey. R. Doddananjayya.—p. 1230.

Radiology, Syracuse, N. Y.

53:313-468 (Sept.) 1949

Clinical Usefulness and Limitations of Supervoltage Roentgen Therapy S. T. Cantril and F. Buschke.—p. 313.
*Roentgen Therapy for Pituitary Adenoma: Correlation of Tumor Dose with Response in 64 Cases. A. L. Bachman and W. Harris. —p. 331.
New Technic for Radium Treatment of Carcinoma of Bladder. M. Friedman and L. G. Lewis.—p. 342.
Method for Measuring Children's Hearts. R. R. Meyer.—p. 363.
*Diagnosis of Intra-Auricular Thrombosis in the Living. J. Arendt and L. Cardon.—p. 371.
Pulmonary Metastases of Pseudo-Adenomatous Basal-Cell Carcinoma (Mucous and Salivary Gland Tumor). I. Lampe and H. Zatzkin. —p. 379.
Fictitious Polyps as Seen in Double-Contrast Studies of Colon. R. D. Moreton, C. A. Stevenson and C. W. Yates.—p. 386.
New Method for Roentgen Anatomical Study of Skull. L. E. Etter. —p. 394.
Calcification in Sympathoblastoma (Neuroblastoma). F. B. Mandeville.—p. 403.
Observations on Hypophyseal Area in Hypertension. T. Ziskin.—p. 406.
Venous Intravasation During Myelography. T. M. Fullenlove. —p. 410.
Multiple Venous Thrombosis and Visceral Carcinoma: Case Report, A. W. Pryde.—p. 413.
Congenital Reduplication of Esophagus: Report of Case. R. C. Frank and L. W. Paul.—p. 417.

Roentgen Therapy of Pituitary Adenoma.—Irradiation was the primary method of treatment in 61 of 64 patients reported by Bachman and Harris. In 13 of these, surgery was subsequently resorted to. Three patients were first treated surgically and were given radiation therapy for postoperative recurrence. There were 38 adenomas of the chromophobic, 21 of the eosinophilic type and 5 of the basophilic type. No significant sex difference was noted in the patients with chromophobic and eosinophilic adenomas, but all 5 of the basophilic adenomas occurred in females. Of the 38 patients with chromophobic adenoma, 19, or half, showed satisfactory improvement following the first course of roentgen therapy. Of the 19 who failed to respond, 11 were retreated by radiation. Of these latter, only 3 showed a satisfactory response. Of the 21 patients with eosinophilic adenoma 8 responded to the first course of therapy. Of the 9 who were retreated only 1 responded favorably. Of the 5 patients with basophilic adenoma 3 derived considerable improvement from irradiation. Microscopic study in 16 cases of pituitary adenoma following radiation therapy failed to show destruction of the tumor. Evidence indicates that although pituitary adenoma is practically never destroyed by roentgen rays, its size is decreased and its growth is considerably diminished in a large percentage of cases. For this reason, it becomes highly desirable that the optimal tumor dose be delivered in as short a time as possible to obtain the maximum early benefit. The present estimate of optimal therapy is the administration of a 3,000 to 4,000 r tumor dose in thirty to forty-five days. If no early satisfactory improvement occurs, surgical intervention would appear indicated. No satisfactory result could usually be expected from an early additional series of roentgen treatments following the foregoing dosage. If the first series resulted in considerable improvement and was then followed by recurrence, at least some success might be expected from a second series.

Diagnosis of Intra-Auricular Thrombosis.—Arendt and Cardon point out that although necropsy reports have proved the frequent occurrence of thrombi within the ventricles and auricles, there are few instances in which intra-auricular thrombi were diagnosed during life. Few have been recognized clinically and still fewer roentgenographically. These thrombi are not an agonal or postmortem phenomenon; they are not the terminal outcome of auricular fibrillation; they are, according to Levine, an important cause of an appreciable number of deaths, and they might well be amenable to modern anticoagulant treatment. The diagnosis of thrombosis of the left auricle can be suspected clinically in rheumatic heart disease with mitral stenosis (or in heart failure), particularly if associated with auricular fibrillation, on the basis of embolization to the peripheral arteries. The diagnosis of an occluding thrombus of the right auricle had until recently never been made except at necropsy. The authors followed a case to necropsy, in which they made a unique clinical observation. Before the terminal picture developed, they noted the occurrence of cyanosis of the face, neck, upper part of the chest, hands and fingers when the patient was in the recumbent posture and its disappearance in the sitting position. This apparently was due to some mobility of the thrombus, which shifted toward the mouth of the superior vena cava in the auricle in recumbent position, so that it partially occluded the vein and impeded the free flow of blood into the auricle. In the sitting position the thrombus by its weight shifted away from the mouth of the vein, permitting it to empty freely. The authors believe that this intermittent postural superior vena cava syndrome is of some value in the diagnosis of mural thrombosis in the right auricle. Not only calcified thrombi but also soft mural thrombi can, under certain conditions, be recognized in roentgenograms of the heart. On the basis of several case histories they show that undue prominence of the left auricular appendage is frequently due to thrombus formation in the left auricle. It is a sign that the appendage area participates in the dilatation of the auricle, which is frequently accompanied with auricular fibrillation. Whenever the roentgenologist reports a particularly decided prominence of the auricular appendage the possibility of auricular fibrillation and thrombus formation should be considered.

Southern Medical Journal, Birmingham, Ala.

42:731-824 (Sept.) 1949

Surgery of Primary Glaucoma: Selection of Operations Based on Modern Classification, Pathologic Findings and Function of Eye with Especial Reference to Cycloelectrolysis and Electroparacentesis. C. Berens, L. B. Sheppard, A. B. Duel Jr. and L. J. Girard.—p. 731.
Chronic Histoplasmosis: Common Cause of Pulmonary Calcification: Report of Case with Superimposed Acute Pneumonitis. B. D. Ress. —p. 738.
Lipid Pneumonia. R. A. Burger and E. L. Wilbur.—p. 741.
Arrhythmias in Normal Hearts. D. A. Nathan.—p. 746.
Squamous Cell Carcinoma of Pancreas. C. C. Lowry, H. W. Whitaker Jr. and D. J. Greiner.—p. 753.
Case of Meigs' Syndrome. J. H. Ridley.—p. 757.
Studies on Absorption, Excretion and Acute Toxicity of Sulfonamide Mixture. P. B. Johnson.—p. 761.
Combined Therapy of Infectious Disease. E. J. Pulaski and H. J. Baker. —p. 765.
Principles of Traction and Suspension in Treatment of Fractures. F. E. Stinchfield.—p. 770.
Surgical Management of Duodenal Ulcer. C. L. Perry and J. W. Merritt Jr.—p. 777.
Surgical Treatment of Hypertension. O. C. Brantigan.—p. 784.
Medical School Financing in Theory and Practice. M. C. Brown. —p. 793.
Present Trends in Teaching Aids in Medical Schools. J. E. Markee. —p. 801.
Skin Cancer: Ten-Year Survey in Private Practice. J. G. Thompson. —p. 805.
Status of Allergy in Relation to Medical Practice. A. F. Wolf.—p. 808.
Kaposi's Varicelliform Eruption: Case Report and Virus Studies. R. J. Blattner, F. M. Heys, A. H. Conrad Jr. and R. S. Weiss.—p. 813.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

24:159-236 (Sept.) 1949

Hydrolysed Casein for Parenteral Administration to Infants. Y. J. Williams, E. A. Bishop and W. F. Young.—p. 159.
Oral Penicillin in the Newborn. B. Levin and C. A. Neill.—p. 171.
Urea Clearance in Immediate Post-Natal Period. J. Thomson.—p. 180.
Early Diagnosis of Rickets. J. D. Gray and F. S. Carter.—p. 189.
Case of Congenital Idiopathic Hypertrophy of Heart. D. J. Conway. —p. 195.
Thrush in Infancy. H. Lederer and R. McL. Todd.—p. 200.
Changing Incidence of Convulsions in Childhood. R. A. Shanks. —p. 208.
Congenital Malformations in One of Monozygotic Twins. J. E. Morison.—p. 214.
Familial Congenital Stridor. H. V. L. Finlay.—p. 219.
Polyarteritis in Childhood. A. V. Neale.—p. 224.

British Heart Journal, London

11:305-420 (Oct.) 1949

Cardiac Infarction with Bundle Branch Block. W. Somerville and P. Wood.—p. 305.
Aortic Sinus Aneurysms. A. M. Jones and F. A. Langley.—p. 325.
Q-T Interval in Acute Rheumatic Carditis. D. G. Abrahams.—p. 342.
Clinical Trial of Rauwolfia Serpentina in Essential Hypertension. R. J. Vakil.—p. 350.
Phonocardiography of Heart Murmurs: Part I.—Apparatus and Technic. E. D. H. Cowen and D. H. Parnum.—p. 356.
Id.: Part II.—Clinical Results and Discussion. E. D. H. Cowen. —p. 360.
*Natural History of Coronary Disease: Clinical and Epidemiological Study. J. A. Ryle and W. T. Russell.—p. 370.
Congenital Aortic Septal Defect. J. H. Dadds and C. Hoyle.—p. 390.
Thoracoscopy as Aid to Diagnosis in Congenital Heart Disease. L. Fatti and J. C. Gilroy.—p. 398.

Coronary Disease: Clinical and Epidemiologic Study.—The first part of this study by Ryle and Russell is based on an analysis of material in the Reports of the Registrar-General (covering a 25 year period) in its bearing on the deaths from coronary disease in England and Wales. The second part is based on the clinical histories of cases seen by one of the authors during a similar period of 23 years. The authors found that the mortality among persons aged 35 years and up in 1945 was greater than in 1921. The increments in the age specific death rates for males and females were on the whole similar, but there is evidence that in the age period 40 to 55 years the male death rate was increasing more rapidly than that for females. They show that the male death rate in middle age is five times greater than that for females, but subsequently this difference decreases again. The mortality from coronary disease among men aged 45 to 55 in the highest social class is nearly 10 times greater than that of their wives. Men of this social category are mainly those in professions and business administration, in which the mental strain from responsibilities is heavy. The authors feel that the effect of multiple cumulative causes has never been sufficiently emphasized. Effort angina induced by walking often occurs more readily after a meal, on a cold day, in a state of anxiety or fatigue, than in the absence of one or more of these circumstances. Similarly, the buttressing effects of the several factors may be regarded as contributing to the slow genesis of the underlying arterial change. Conditions of work in many professional and business careers impose strains which, when endured too long, are beyond physiologic tolerance. Members of predisposed families might be encouraged to regulate their lives more rationally. The organization of holidays, leisure exercise and pleasurable relaxation is as sensible as attention to sanitary habits and balanced dietaries.

Edinburgh Medical Journal

56:273-336 (July) 1949

Medical Research as an Aim in Life. H. H. Dale.—p. 273.
Old Infirmary of Dundee 1798-1855. H. J. C. Gibson.—p. 285.
Seventeenth Century Case of Poliomyelitis. W. J. Maloney.—p. 304.
Effects of Thiouracil upon Climacteric Hyperthyroidism. A. W. Branwood.—p. 312.
Effect of Changes of Temperature on Haemolysis of Erythrocytes. E. B. Hendry.—p. 320.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

56:529-740 (Aug.) 1949

Case of Transplacental Metastasis of Malignant Melanoma from Mother to Foetus. E. Holland.—p. 529.
Maternal Circulation in Normal Pregnancy. A. J. Palmer and A. H. C. Walker.—p. 537.
Cardiac Output in Normal Pregnancy: As Determined by Cournand Right Heart Catheterization Technique. H. F. Hamilton.—p. 548.
Further Radiological Studies in Investigation of Obstetric Disproportion with Especial Reference to Contracted Pelvic Outlet. E. R. Williams and H. G. E. Arthure.—p. 553.
Symphysiotomy and Pubiotomy: Apologia Based on Study of 41 Cases. A. W. Spain.—p. 576.
Endometriosis and Intussusception of Appendix. A. L. Deacon. —p. 586.
*Rubella in Pregnancy as Aetiological Factor in Congenital Malformation, Stillbirth, Miscarriage and Abortion. C. Swan.—p. 591.
Pregnancy and Coarctation of Aorta. G. H. H. Benham.—p. 606.
Pathological Changes in Blighted Twins. W. G. Mills.—p. 619.
Oestrogenic Therapy with Prolonged Action: Report on Water Suspensions of Oestradiol Monobenzoate. H. K. Toppozada.—p. 625.
Anaesthesia in Caesarean Section: with Special Reference to Use of d-Tubocurarine Chloride. H. V. Corbett and J. P. Thomas.—p. 632.
*Postabortal Infection with Clostridium Welchii: Report of 2 Cases, with Special Reference to Oliguria and to Penicillin Treatment. M. A. M. Bigby and F. A. Jones.—p. 636.
Treatment of Functional Bleeding in the Last Decade of Reproductive Life. J. F. Forbes.—p. 648.
Primary Brow Presentation. K. Vartan.—p. 650.
Subacute Bacterial Endocarditis in Pregnancy. J. Mair and M. M. O'Hare.—p. 652.

Rubella in Pregnancy.—Swan adduces evidence to indicate that a relation exists between the contraction of rubella in the early months of pregnancy and the occurrence of congenital defects in the infants born subsequently. Some critics believe that the association may be casual rather than causal. There are strong objections against this claim. First the period at which the mother suffered from German measles is virtually confined to the first four months of pregnancy, whereas if the association was fortuitous there would be a more even distribution over each of the nine months. Second, the malformations are reproductions of a specific syndrome comprising cataract, deaf-mutism, heart disease and microcephaly. It appears paradoxic that such a trivial disease as rubella should lead to such severe malformations, and yet it is the relatively low virulence of the virus of German measles which enables the embryo, though damaged, to survive. Although low virulence is accompanied by low mortality it also implies high morbidity. An infection of greater virulence than rubella is followed by death and extrusion of the embryo. An effective method of immunization against rubella is urgently needed. Anderson has demonstrated that rubella can be transmitted to susceptible human beings by causing them to inhale atomized throat washings obtained at the height of the exanthem from patients with the disease. The infection evoked is communicable to others, so that it would be necessary to isolate those subjects desirous of immunization. With regard to passive immunization, McLorinan has obtained encouraging results from the use of gamma globulin derived from the serums of patients convalescing from rubella. The globulin was injected in a dose of 2 cc. into women, the majority of whom were less than four months pregnant. Most of them were inoculated less than a week after contact with rubella.

Postabortal Infection with Clostridium Welchii.—The 2 cases of septicemia due to Clostridium welchii reported by Bigby and Jones were the only ones occurring among 2,795 abortion patients admitted during the past seven years to this hospital. There were 9 deaths (0.32 per cent) from abortion during this period, and in none of the fatal cases was there clinical or bacteriologic evidence of clostridial infection. The 2 cases of septicemia were in women aged 24 and 23. A feeble, rapid pulse and low blood pressure in an alert patient, particularly if associated with a livid cyanosis, jaundice and scanty, port wine-colored urine, are almost pathognomonic of infection with Cl. welchii, but quinine sensitivity should be excluded. Bacteriologic examinations of vaginal swabs and blood should be made, but the reports should not be awaited before treatment is begun. The second infection showed typical hemolysis caused by Cl. welchii. The hemoglobinuria gave rise to a port wine-colored urine and the hemoglobinemia caused a bronze

discoloration of the skin, suggesting jaundice. The first patient had a more severe infection, but part of her shock and toxicity may have been due to the fact that the abortifacient fluid was injected into the pelvic cellular tissue. She showed signs of hemolysis and had oliguria, which persisted for nine days. A slight diuresis occurred and a profuse diuresis on the eleventh day. The maculopapular eruption and purpuric hemorrhages were interesting features. Attempts must be made not only to destroy the invading organisms but also to treat the toxemia, the anemia resulting from hemolysis and the renal failure which frequently occurs. Intravenous infusions of dextrose and saline solution are required for treating the collapse, and transfusion of blood serum or plasma may be necessary to raise the blood pressure. The risk of overloading the circulation must be remembered. Chemotherapy with penicillin offers considerable hope of success in combating the infection. The oliguria is probably due to a lower nephron lesion, and there is usually recovery of renal function between the eighth and fifteenth days. The therapeutic problem is therefore to keep the patient provided with adequate but not excessive fluids during this time. In the presence of penicillin treatment local therapy may probably be delayed until the toxic effects of the infection are under control, unless hemorrhage necessitates digital evacuation of the uterus immediately. This proved successful in 2 cases.

Journal of Physiology, Cambridge

109:1-258 (Aug.) 1949. **Partial Index**

New Methods for Calculating Metabolic Rate with Special Reference to Protein Metabolism. J. B. de V. Weir.—p. 1.
Action of Botulinum Toxin on Neuro-Muscular Junction. A. S. V. Burgen, F. Dickens and L. J. Zatman.—p. 10.
Development of Sensitivity to Acetylcholine in Denervated Muscle. G. Reid and E. M. V. Williams.—p. 25.
Changes in Ionic Distribution Following Dialysis of Aqueous Humour Against Plasma. H Davson, W. S. Duke-Elder and D. M. Maurice. —p. 32.
Method for Determination of Heparin in Blood. L. B. Jaques, F. C. Monkhouse and M. Stewart.—p. 41.
Role of Adrenal Cortex in Maintenance of Sciatic Pressor Reflex. J. Secker.—p. 49.
Reactions of Peripheral Circulation to External Heat. J. Grayson.—p. 53.
Effect of Voluntary Hyperpnoea on Pulmonary Blood Flow. G. H. Armitage and W. M. Arnott.—p. 64.
Air Distribution in Lungs During Hyperventilation. G. H. Armitage and W. M. Arnott.—p. 70.
Renal Responses of Infants and Adults to Administration of Hypertonic Solutions of Sodium Chloride and Urea. R. F. A. Dean and R. A. McCance.—p. 81.
Sugar of Foetal Blood, Amniotic and Allantoic Fluids. H. Barklay, P. Haas, A. St. G. Huggett and others.—p. 98.
Absorption from Lungs. F. C. Courtice and W. J. Simmonds.—p. 103.
Simultaneous Estimation of Absorption of Water and Sulphaguanidine from Stomach of Man. J. N. Hunt.—p. 134.
Inhibition of Water Diuresis in Man by Ischaemic Muscle Pain. A. R. Kelsall.—p. 150.
Antidiuretic and Oxytocic Hormones in Posterior Pituitary Glands of Newborn Infants and Adults. H. Heller and E. J. Zaimis.—p. 162.
Multi-Sensitization of Guinea-Pig Uterus by Serum Proteins. L. B. Winter.—p. 185.
Effects of Intra-Arterial Adrenaline on Carbohydrate Metabolism in Man. J. A. Hildes, S. H. Purser and S. Sherlock—p. 232.

Lancet, London

2:587-634 (Oct. 1) 1949

*Cancer of the Lung: Review of 1,000 Cases. G. A. Mason.—p. 587.
Treatment of Status Epilepticus. C. W. M. Whitty and M. Taylor. —p. 591.
Torsion and Other Affections of Appendices Epiploicae. C. Wakeley and P. Childs.—p. 594.
Bacteraemia Following Dental Extractions. M. G. McEntegart and J. S. Porterfield.—p. 596.
Relation of Birth Weight to Physical Development in Childhood. R. S. Illingworth, C. C. Harvey and S.-Y. Gin.—p. 598.
Radiotherapy of Accessible Malignant Tumours by Alternating Chess-Board Method. B. Jolles.—p. 603.
Haemopoietic Activity of Whale-Liver Extract. J. Innes and H. N. Robson.—p. 606.
Eosinophil Leucocyte, Eosinophilia, and Allergy: Hypothesis. D. J. Dalton.—p. 607.
Congenital Hydronephrosis and Hydro-Ureter with Contralateral Pain. N. Hudson.—p. 609.

Cancer of the Lung.—The information presented by Mason is based largely on experience gained in a Chest Surgery Center, which was established in the North of England 15 years ago, and in which more than 1,000 cases have been dealt with. Cancer of the lung occurs most commonly between 45 and 55 years in men and at a slightly younger age in women. Men made up over 90 per cent of this series. There are three histologic types of cancer arising from the bronchial epithelium: the undifferentiated or oat cell type, epidermoid carcinoma and adenocarcinoma, in that order of frequency. Since cancer of the lung is often clinically silent in its earlier stages, it may be discovered accidentally by radiography. In this series cough was the commonest first symptom and after that pain, dyspnea, lassitude, hemoptysis, wasting, fever and clubbing. The differential diagnosis of bronchogenic cancer is difficult, because the conditions it may simulate are legion. In nearly two thirds of the 1,000 cases reviewed the roentgenologic picture was one of collapse, either of an entire lung or of a lobe; about one sixth had a dense shadow in the hilus; about 10 per cent had a cavity with fluid mimicking a chronic lung abscess; a solitary mass was noted in 4 per cent, and the remaining cases presented the aspects of apical fibrocavernous tuberculosis or of massive effusion. Bronchoscopy and the taking of a biopsy specimen is an essential investigation, but many growths are in inaccessible bronchi. Exploratory thoracotomy is indicated in all cases without obvious contraindications. Bronchial fistula and empyema are the most serious complications of pneumonectomy. The author performed an exploratory operation in 353 out of the 1,000 patients, and of these pneumonectomy was possible in 202. Of the patients who underwent pneumonectomy, 54 died within a month, as did 32 of the 151 who merely underwent exploration. Of those who underwent pneumonectomy and survived the first month, 68 died from metastases, and another 18 from other causes. Roentgen treatment was given to patients who declined the operation or were unsuited for it, to those whose growth was found to be inoperable, to all with undifferentiated growths, whether operated on or not, and to those in whom the lymph nodes were involved. Symptomatic improvement often follows roentgen therapy, but in the majority of cases this is not maintained. There are 42 patients alive out of 445 treated with roentgen rays. The periods of survival ranged from five months to 5.5 years. Of the 202 patients subjected to pneumonectomy 62 were alive two months to seven years after the operation.

New Zealand Medical Journal, Wellington

48:345-430 (Aug.) 1949. **Partial Index**

Increase of Weight During Pregnancy: Study of European Women in New Zealand. B. Dawson and H. Borg.—p. 357.
Two Decades of Lobar Pneumonia: Study of Incidence and Mortality Rates of Lobar Pneumonia As Seen in Wellington Hospital During Past Twenty Years. M. H. Watson.—p. 371.
Ehlers-Danlos Syndrome: Syndrome of Hyper-Elastic Skin; Hyper-Mobile Joints; Haemorrhagic Tendency: Report of Case. B. Pierard and H. Palmer.—p. 377.
*Use of Streptomycin in Treatment of Progressive Post-Operative Gangrene of Abdominal Wall. H. Karn.—p. 380.
Testing Hearing and Assessment of Loss of Capacity for Hearing of Speech. J. H. Neil.—p. 385.

Streptomycin in Postoperative Gangrene of the Abdominal Wall.—Karn presents 3 cases of postoperative gangrene which showed no response to the administration of penicillin or sulfonamides or the local application of peroxide dressings but responded in forty-eight hours to doses of 2 Gm. streptomycin daily with full recovery. Theoretically the disease is one caused by the symbiosis of two bacteria, Staphylococcus aureus and microaerophilic anaerobic Streptococcus. Presumably streptomycin kills one of them and appears to inactivate the combination in twenty-four to forty-eight hours.

Thorax, London

4:125-172 (Sept.) 1949

Non-Specific Suppurative Pneumonia. A. Logan and H. Nicholson. —p. 125.
Haemolytic Anaemia Complicating Virus Pneumonia. E. Besterman and W. Brigden.—p. 134.
Cavernous Pulmonary Telangiectasis. J. Hayward and L. Reid.—p. 137.
Spontaneous Pneumothorax Complicating Artificial Pneumoperitoneum. E. G. S. Lumsden.—p. 147.
Radiology of Primary Atypical Pneumonia. P. W. Verco.—p. 152.
Pulmonary Aspergillosis in Coal Workers. A. G. Heppleston and S. R. Gloyne.—p. 168.

Klinische Wochenschrift, Heidelberg

27:521-552 (Aug. 15) 1949. **Partial Index**

Mitotic Activity of Human Bone Marrow and Its Modification by Cytostatic Substances. H. Begemann and W. Hemmerle.—p. 530.
*Occurrence and Significance of Cold-and Auto-Agglutination of Erythrocytes. W. Tischendorf, E. Fritze and W. Schulz.—p. 538.

Cold Agglutination and Autoagglutination of Erythrocytes.—Tischendorf and his associates made a systematic search for cold agglutinins and autoagglutinins in 20 healthy persons and in 180 patients with a wide variety of disorders. Cold agglutinins, often together with autoagglutinins, were observed in pneumonias and bronchopneumonias which were not of virus origin, in generalized sepsis and particularly in endocarditis lenta when the organism was found in the blood, in tuberculosis of various organs and in tuberculous meningitis, in some leukemic disorders, in agranulocytosis and panmyelophthisis, in typhoid, in brucellosis, in renal disorders, in cystitis and cystopyelitis, in bronchial asthma and vascular disorders. The cold agglutinins were usually of low avidity, and the titer rarely exceeded 1:32. The titer of the autoagglutinins was likewise usually rather low. Agglutination titers of 1:64 or 1:128 were not frequent, and, when they were noted, they did not necessarily concur with the development of a reactive hemolytic anemia. Cold agglutinin titers as high as 1:256 or 1:512 were occasionally observed in cirrhosis of the liver, herpes zoster, bronchial asthma and in a case of bone sarcoma, but here again there was no effect on the blood. A high titer for cold agglutinins and occasionally also an already high titer for autoagglutinins was accompanied with positive serologic reactions for syphilis. Occasionally strongly positive Takata reactions, positive Wassermann reaction and high agglutinin titers of the erythrocytes existed simultaneously, but there were no hemolytic manifestations. The fact that patients with hepatitis and those with infectious mononucleosis had only slight or no pathologic agglutination seemed surprising. The authors conclude that their systematic studies on the occurrence of cold agglutinins and autoagglutinins demonstrate clearly that these abnormal serologic reactions, which cause agglutination of erythrocytes in vitro, cannot have a specific pathogenetic significance; furthermore, the presence of these agglutinins is not always accompanied with a hemolytic syndrome.

Maandschrift voor Kindergeneeskunde, Leyden

17:131-162 (No. 5) 1949. **Partial Index**

Transposition of Large Vessels: 2 Cases. J. H. P. Jonxis and P. J. Kooreman.—p. 136.
*Adrenogenital Syndrome. S. J. De Jong.—p. 155.

Androgenital Syndrome.—De Jong described in an earlier publication necroptic studies on 2 nurslings with pseudohermaphrodism, who died when 2 weeks old with the clinical symptoms of vomiting and dehydration. Necropsy revealed a tumor of the suprarenal cortex in both infants. He now reports 2 infants in whom he was able to diagnose hypofunction of the suprarenal cortex during life. These infants likewise had frequent attacks of vomiting and were dehydrated owing to a lack of pituitary adrenal cortical hormone, which regulates the "water and salt" exchange. The excretion of 17 ketosteroids, particularly the fractions formed in the adrenal cortex, was increased in both of these infants. The author assumes that these infants had a tumor of the androgenic zone of the adrenal cortex, which caused the virilization which was evident in both infants. One of them, a boy, showed macrogenitosomia; the other, a girl, had pseudohermaphrodism. This tumor obliterated the other zones, resulting in the adrenocortical insufficiency. Administration of desoxycorticosterone acetate had a life-saving effect by compensating for the lack of "water and salt" hormone.

Revista de la Asociación Méd. Argentina, Buenos Aires

63:301-340 (July 15-30) 1949. **Partial Index**

*Pregnancy in Course of Addison's Disease. R. Q. Pasqualini.—p. 303.
*Motor Forms of Herpes Zoster. C. A. Bardeci.—p. 326.

Pregnancy in Addison's Disease.—Several cases according to Pasqualini were reported in the literature of patients in whom Addison's disease lasted two to ten years and who gave birth to one or more children. The pregnancy, delivery and puerperium were as a rule uncomplicated, and the infants normal. Some of the children presented several years later symptoms of adrenal insufficiency. The author cites a woman aged 35 with Addison's disease of ten years' duration, during which period she had had three normal children. The symptoms became acute in the fourth month of the last pregnancy. She was treated with desoxicorticosterone in daily doses of 2.5 mg. for two months and of 5 mg. for the last three months of pregnancy. She was given 5 cc. of extract of adrenal cortex daily and 5 mg. of desoxicorticosterone during the first week of puerperium. Delivery, puerperium and lactation were normal. The infant was normal. The patient was in excellent condition three weeks after parturition, when she was treated by implantation of two pellets of desoxicorticosterone 100 mg. each. The mother and the infant are well several months after delivery. Stimulation of the adrenal secretion which occurs in the last three months of pregnancy is due to a response of the adrenal glands to hormonal changes of pregnancy. It is not due to supplemental output of adrenal substances by the fetus. The prognosis of Addison's disease in the course of pregnancy depends mainly on the acuteness of the adrenal lesion and on the presence or absence of adrenal tuberculosis. Minimal doses of desoxicorticosterone should be administered in the course of pregnancy.

Motor Types of Herpes Zoster.—Motor types of herpes zoster are rare and are seen more frequently in older persons. Bardeci reports 2 women aged 68 and 78 and a man aged 38. Paralysis occurred in all 3 patients immediately after the eruption and the development of the sensory symptoms. The motor paralysis involved chiefly the brachial plexus. The motor lesions were acute. They progressed in 1 patient to areas not involved by sensory disturbances. Improvement occurred within three months in 1 patient, and recovery was complete in another month. The motor disorders became stationary in the oldest patient. The type of paralysis, its coincidence with sensory involvement and the nucleoradicular character of paralysis, as confirmed by electrodiagnosis, suggest that these types are caused by an ascending virus neuritis which reaches the spinal ganglions through the sensory neurons of the peripheral nerve. It allows the passage of the virus to the anterior horns, through the axis cylinders of the afferent sensory route. The virus lesions of the motor cells of the anterior horns are reversible in two to four months.

Revista do Instituto Adolfo Lutz, São Paulo

8:7-184, 1948. **Partial Index**

*Procaine Penicillin G: Serum Concentrations and Therapeutic Effect. D. de Oliveira Penna, H. Ashcar and M. R. Viotti.—p. 48.

Serum Concentrations of Penicillin.—De Oliveira Penna and collaborators measured the serum concentrations of penicillin following administration of crystalline procaine penicillin G in aqueous suspension in 21 persons. The drug was administered by deep intragluteal injection in only one dose of 1 cc. of the suspension, containing 300,000 units of penicillin, to all but 3 patients, who had a total of three or five injections of the same dose with intervals of twelve hours. In 7 out of 10 persons, either normal or with dermatologic disease, the administration of only one injection of 300,000 units of penicillin caused maximal serum penicillin levels ranging between 0.20 and 0.85 units of penicillin in 1 cc. of blood serum. The figures were higher for the 3 persons in this group that had repeated injections at intervals of twelve hours. The serum penicillin levels twenty-four or twenty-five hours after administration of the drug ranged between 0.06 and 0.12 units in all 10 cases in this group. High serum penicillin levels lasted longer in 3 patients with oliguria in coma than in the fourth patient, who was receiving fluids. The single dose of 300,000 units of penicillin resulted in cure of 6 of 7 patients with lobar pneumonia. The serum levels were higher and of longer duration than in patients in the other two groups. The levels ranged between 0.06 and 0.16 units of penicillin for 1 cc. of blood serum twenty-four hours after administration and between 0.04 and 0.16 units thirty-six hours after administration of the drug. The significantly higher levels obtained in the second and third groups, as compared with the first group, were probably due to oliguria, a consequence of either restricted fluid intake or of fever.

Schweizerische medizinische Wochenschrift, Basel

79:849-880 (Sept. 17) 1949. **Partial Index**

Role of Freedom in Treatment of Mental Patients. J. E. Staehelin. —p. 850.
*Practical Experiences and Experimental Studies on Modified Electroshock Therapy. J. Heuscher and P. Kielholz.—p. 853.
Schizophrenia in Boy Nine Years Old. P. Mohr.—p. 856.
Failure to Recognize Sequelae of Lethargic Encephalitis. G. Maier. —p. 858.
Psychosomatic Aspects of Human Tremor. H. Christoffel.—p. 860.

Modified Electroshock Therapy.—Heuscher and Kielholz treated 167 patients with acute schizophrenia, 27 with involutional and endogenous depressive phases and 17 with other conditions of irritability with electroshock therapy preceded by treatment with curare, thiopental sodium U.S.P. or insulin. Insulin was employed for preshock-treatment in schizophrenic patients who had to be treated with insulin for twelve weeks. Combined insulin and electroshock treatment was given during the last six weeks when there was little progress or in patients with pronounced depressive component. Pretreatment with curare was combined with insulin or thiopental sodium in patients who were threatened by fractures, dislocations or cardiac complications. More than 1,000 curare-electroshock treatments were carried out without complications, while five fractures occurred during 9 of 950 electroshock treatments without premedication with curare. There must be an interval of six hours between two pretreatments with curare. Pretreatment with thiopental sodium facilitates shock treatment in patients who fear or resist shock treatment. The results of so-called "shock treatment under anesthesia" are at least as good as those of the usual shock treatment, although the patient, since he is asleep, does not experience apprehension before the treatment and does not live consciously through the state of confusion following the attack. By rousing some of the patients immediately after the attack, one could demonstrate that the temporary psycho-organic syndrome had not been changed by the pretreatment with thiopental sodium. It is important that the treatment be pleasant to the patient. The narcoanalytic effect of the thiopental sodium is a favorable factor. The results of the modified electroshock therapy demonstrate the value of organic methods of treatment in psychoses.

Semaine des Hôpitaux de Paris

25:2803-2826 (Sept. 14) 1949

*Congenital Transplacental Tuberculosis with Meningitis Cured with Streptomycin. E. Lesné, Cayla, Roche and Allard.—p. 2803.
Functional Coronary Insufficiency in Mitral Disorders. E. Viciu. —p. 2804.

Streptomycin in Congenital Transplacental Tuberculosis.—Lesné and co-workers treated a male infant with congenital transplacental tuberculosis with streptomycin. The infant was delivered about term while his mother had tuberculous meningitis and had been treated for this disease with streptomycin for more than one month before the delivery. She died seven months after the birth of the infant, who was separated from his mother immediately after birth. Microscopic examination of the placenta did not reveal any tubercles. The weight of the infant at birth was 2.36 Kg., his general condition was good and the initial growth was normal. A cutaneous test performed on the infant three and a half weeks after birth was negative, but he presented a positive intradermal reaction at the age of 1 month, when he had a bout of fever. The blood sedimentation rate was increased. Roentgenographic examination revealed a granular picture. Verne's resorcin test was positive. Streptomycin therapy was instituted by the subcutaneous route with a daily dose of 0.2 Gm. for one week; it was continued with 0.3 Gm. daily for three months and after that with 0.15 Gm. daily for an additional six months. The total dose administered was 35.85 Gm. The initial clinical course was that of a true bacillary septicemia, proved by the fact that tubercle bacilli were demonstrated on inoculation of guinea pigs with the cerebrospinal and gastric lavage fluid of the infant. Streptomycin treatment remained ineffective clinically for five months, but the isolated strain proved sensitive to streptomycin. Slow clinical improvement started during the sixth month of treatment, and there resulted complete recovery without sequelae. The streptomycin treatment of the mother prevented stillbirth or perhaps the premature birth of a weak, infected infant. Treatment of the infant with streptomycin prevented his death, which was the rule in congenital tuberculosis before streptomycin was employed.

Ugeskrift for Laeger, Copenhagen

111:1021-1046 (Sept. 15) 1949. **Partial Index**

Diabetic Retinopathy. H. Vogelius.—p. 1021.
*Value of Exton-Rose Tolerance Test in Diagnosis of Diabetes Mellitus. V. Schmidt.—p. 1023.
*Treatment of Diabetes Mellitus with Combination of Protamine Insulin and Ordinary Insulin. J. E. Poulsen.—p. 1029.
Local Lipodystrophy After Insulin Injections. V. Schmidt.—p. 1031.
Treatment of Myoses with Parathyroid Hormone. F. Tvedegaard. —p. 1037.

Value of Exton-Rose Tolerance Test in Diagnosis of Diabetes Mellitus.—Schmidt tabulates the results of the Exton-Rose tolerance test in diagnosis of diabetes mellitus applied over a three year period in 54 patients. Satisfactory information was obtained. The short time required (one hour) and the few laboratory examinations (three blood sugar determinations, two urine sugar determinations) are advantages for patient and laboratory. Patients whose third blood sugar value is below 160 mg. per hundred cubic centimeters are considered not to have diabetes mellitus. Patients are considered to have the disease if the fasting blood sugar is increased, if the third blood sugar determination is over 180 mg. per hundred cubic centimeters, or if the rise from the first to the second blood sugar test exceeds 75 mg. and the value for the third test is in the doubtful field between 160 and 180 mg. per hundred cubic centimeters.

Treatment of Diabetes Mellitus with Combinations of Protamine Insulin and Ordinary Insulin.—Poulsen finds the mixture of crystalline protamine insulin (slow-acting insulin) and ordinary insulin valuable in the treatment of diabetes mellitus in patients with decided sensitivity to insulin (juvenile diabetes), as the weaker but more lasting effect of protamine insulin is thus combined with the stronger but more transient effect of ordinary insulin. Glycosuria is less frequent and insulin-resistant cases are fewer. The mixture can be adapted to the insulin requirements of the individual. Injections of a combination of the two preparations act as would separate and simultaneous injections of the two components in the same doses as in the mixture.

111:1065-1090 (Sept. 29) 1949

*Tyrosolvin. Investigations on Its Antibacterial Action in Vitro. K. Skadhauge.—p. 1065.
*Tyrosolvin. Ophthalmologic Possibilities. G. Østerberg.—p. 1068.
Tyrothricin Treatment in Certain Otolaryngologic Affections. Preliminary Report. J. Falbe-Hansen.—p. 1075.

Tyrosolvin. Investigations on Its Antibacterial Action in Vitro.—Skadhauge's experiments in vitro show that tyrosolvin, a water-soluble tyrothricin preparation consisting of equal parts of tyrothricin and cetyl pyridinium chloride, has a marked antibacterial effect on a number of gram-positive bacteria, especially pneumococci, streptococci and diphtheria bacilli, and a relatively weaker action on enterococci, Enterococcus-like streptococci and staphylococci.

Tyrosolvin. Ophthalmologic Possibilities.—Østerberg says that tyrosolvin allows tyrothricin to be brought into direct contact with the pathogenic bacteria. He applied the agent in the treatment of diseases of the external eye. There seems to be no danger of sensitization and of development of resistance. Results with tyrosolvin therapy of squamous and ulcerous blepharitis, recent cases, those without treatment, and those with treatment for up to twenty years, of acute conjunctivitis of morphologically different forms and of acute superficial keratitis of different types are presented. Of the 146 patients with blepharitis treated, 131 were cured in two to three weeks; of the 27 patients with acute conjunctivitis and of 35 with acute superficial keratitis, 24 and 32, respectively, were cured in one to two weeks. It is suggested that tyrosolvin may be tried where the continued use of other agents has caused allergic reaction.

Book Notices

THE REVIEWS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES AND DO NOT REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED.

Urological Aspects of Spinal Cord Injuries. By George C. Prather, M.D. Publication Number 30, American Lecture Series. A Monograph in American Lectures in Surgery. Edited by Michael E. DeBakey, M.D., Professor of Surgery, Chairman, Department of Surgery, Baylor University College of Medicine, Houston, Texas, and R. Glen Spurling, M.D., Clinical Professor of Surgery, University of Louisville, Louisville, Ky. Cloth. $3.75. Pp. 146, with 38 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1949.

This is a monograph presenting the present status of knowledge of the urologic aspects of spinal cord injuries. This subject has assumed great importance during the last few years because of the many war casualties and the increasing number of automobile accidents. The subject matter is well arranged and is profusely illustrated. Anatomy and physiology receive due consideration. An extensive bibliography is appended. The author discusses the military policy of treating war casualties and stresses the importance of institution of proper treatment at once. An excellent suggested program for treatment in these cases is given at the end of the book. The value and importance of team work is emphasized. This monograph should be in the hands of every urologist, neurologist and orthopedic surgeon.

Die Kieferklemme: Ihre Entstehung und Behandlung unter Berücksichtigung einer neuen orthopädischen Behandlungsmethode. Von Dr. med. Dr. dent. Martin Hermann, o.ö. Professor, Direktor der Klinik und Poliklinik für Zahn-, Mund- und Kieferkrankheiten an der Johannes-Gutenberg-Universität Mainz. Cloth. Pp. 115, with 65 illustrations. Werk-Verlag Dr. Edmund Banaschewski, (13b) Bad Wörishofen, Germany, 1948.

This book discusses all conditions that lead to immobilization of the temporomandibular joint or to inability to open or close the mouth. It is based on wartime experience with some 30,000 cases of injury to the lower half of the face and on studies of about 2,000 of the 24,000 skulls that have accumulated since the Thirty Years' War at the famous Grenzeck *Schädelkapelle* (Chapel of Skulls). The movements of the jaw are minutely considered in 26 pages of anatomic and physiologic analysis; then follows a discussion of the possibilities of interference with these movements after disease or trauma and a summary of diagnostic methods, including roentgenology. The main portion of the book, dealing with practical problems of treatment, is a substantial contribution to surgery. Indications, anesthesia and incision, the handling of muscles, joints and mucous membranes, and postoperative care are discussed in detail. The illustrations show some new devices whereby the patient himself can aid in the process of broadening the range of jaw movement. A short chapter on the estimation of disability for insurance purposes is followed by a closing summary. The book is recommended to persons interested in oral and military surgery, orthopedics and medical insurance problems.

Dermatologie für Augenärzte. Von Walther Schönfeld, Prof. Dr. med. an der Universität Heidelberg. Half-cloth. Price, $7.25. Pp. 109, with 92 illustrations. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O; imported by Grune & Stratton, Inc., 381 4th Ave., New York 16, 1947.

This book is written for ophthalmologists with the purpose of giving them the elementary knowledge of dermatology which they need because of the frequent association of diseases of the eye and skin and because of the frequent occurrence of dermatoses on the eyelids. Although it is not intended "to be a surrogate for a dermatologic text" it includes practically all dermatologic entities, since there are few skin diseases which do not occasionally involve the eyelids. Thus the book becomes in fact a short dermatologic manual, and as such it is written with remarkable skill, revealing its author to be a clear-thinking dermatologist with vast clinical and teaching experience. However, in precisely the field it purports to cover, namely, the ophthalmologic aspects of skin diseases, the text is rather sketchy. Corneal involvement in ophthalmic herpes zoster and cataract in atopic dermatitis are not mentioned. The controversial issue as to whether ocular pemphigus is a part of pemphigus vulgaris or an independent disease is not discussed. That ocular pemphigus is a manifestation of pemphigus vulgaris is taken for granted.

This book shows rather pathetically how sluggish the exchange of medical knowledge still is among nations. Although published in 1947 the book does not mention penicillin, for instance in the treatment of erysipelas, or calciferol (vitamin D_2) in the treatment of lupus vulgaris. The antihistaminics are apparently unknown to the author; otherwise he probably would not insist that urticarias due to cold and heat are not true allergic states.

The book is illustrated by 45 black and white and 45 excellent and well chosen colored photographs. The book is to be recommended as a well written and well illustrated dermatologic manual for the general practitioner and for specialists in all fields who have command of the German language. The dermatologists in this country who, rightly or wrongly, are no longer accustomed to thinking in terms of "diatheses" will be particularly interested in the introductory chapters, dealing with the seborrheic, exudative and allergic "diatheses."

Hospital Laundry: Manual of Operation. American Hospital Association Publication No. M7-49. Paper. $1.50 to Association members; $2.25 to non-members. Pp. 167, with illustrations. American Hospital Association, 18 E. Division St., Chicago 10, 1949.

The Committee on Laundry Management of the American Hospital Association, with the assistance of M. E. Barnes, M.D., professor of hygiene and preventive medicine at the State University of Iowa, and the American Institute of Laundering, has prepared this practical guide to efficient hospital laundry operation. The manual is written primarily for the layman and specifically for the laundry manager; the chemistry involved in laundry procedures is adequately explained in clear, nonscientific terminology. Chapters include discussions of linens, washroom practice, public health aspects, textile damage, finishing and production standards, linen service and distribution, opportunities for economy and machinery and equipment. Hospital administrators, business managers, purchasing agents and housekeepers will find this manual a valuable guide for the economical establishment and maintenance of this essential sector of the modern hospital, which has been defined as "a hotel where the guests are ill." The practical aspects of laundry research as applied to institutions of 50 to 1,000 beds are tabulated without endorsement of particular equipment or products.

Streptomycin and Dihydrostreptomycin in Tuberculosis: Reports of Research Including Studies Sponsored by the American Trudeau Society (Medical Section, National Tuberculosis Association). Edited by H. McLeod Riggins, M.D., and H. Corwin Hinshaw, M.D. Cloth. $7.50. Pp. 554, with illustrations. National Tuberculosis Association, 1790 Broadway, New York 19, 1949.

This volume consists largely of reprints of the important papers published since 1944 on the subject of streptomycin and dihydrostreptomycin in tuberculosis. This book has historical as well as practical value. The first section contains reprints of the first announcements of the in vitro bacteriostatic action of streptomycin against Mycobacterium tuberculosis, the first official report of the in vivo suppressive effect of streptomycin in experimental tuberculosis and the first paper reporting the use of streptomycin in clinical tuberculosis.

The second section is devoted to a brief description of the streptomycin-tuberculosis research project of the American Trudeau Society. In section three, certain bacteriologic problems are discussed. In previously unpublished papers, Dr. William Steenken Jr. of Saranac Lake and Dr. Guy P. Youmans of Northwestern University each discuss the question of bacterial resistance to streptomycin. Another paper, by Sadusk and Swift, reprinted from the *Journal of Clinical Investigation*, discusses clinical aspects of tubercle bacillus sensitivity.

The pathology of tuberculosis and its relation to chemotherapy is introduced by a previously unpublished discussion by Dr. William H. Feldman. This subject is continued by Drs. Archie H. Baggenstoss and Edgar M. Mesar.

The fifth section of the book contains the reports of the American Trudeau Society investigators on their experience in the treatment of clinical tuberculosis with streptomycin. These reports, some of which have been published in part in various

periodicals, are complete and detailed presentations of carefully controlled clinical observations on a large number of patients with all forms and degrees of tuberculosis. The investigators represented are well known and authoritative, and their conclusions can be accepted as being logically derived from the voluminous evidence presented. One of the most important and enlightening chapters in the book is that prepared by Dr. Riggins and his associates on the integration of streptomycin therapy with other procedures in the treatment of tuberculosis. This summarizes the previous papers and gives the conclusions to be derived from the Trudeau Society's study and indicates clearly the role of streptomycin therapy in clinical tuberculosis. This chapter, however, omits discussion of some aspects of the Trudeau study which are discussed by Drs. Riggins and Hinshaw in a subsequent section.

The seventh section covers a number of important topics, notably streptomycin toxicity. This section also contains a reprint of the report made to the Council on Pharmacy and Chemistry by the Army, Navy and Veterans Administration on their experience in the treatment of tuberculosis with streptomycin.

The last section of the book deals with preliminary observations on the action of dihydrostreptomycin and para-aminosalicylic acid in experimental and clinical tuberculosis. These drugs are relatively new, and the period of study has been insufficient to provide a final estimate of their usefulness and place in the chemotherapy of tuberculosis. The discussions are important, however, in forecasting the trend of future investigations.

This book, published by the National Tuberculosis Association, is authoritative and well edited. It should be studied by every physician called on to treat tuberculosis. The bacteriologist and pathologist will find much of value here. The book can be heartily recommended to all physicians as an able presentation of data and information derived from a well conceived cooperative study which will have lasting value.

Conditioned Reflex Therapy: The Direct Approach to the Reconstruction of Personality. By Andrew Salter. Cloth. $3.75. Pp. 359. Creative Age Press, Inc., 11 E. 44th St., New York 17, 1949.

The group with which this book should become popular will include a considerable number of pseudopsychotherapists. This group will be made up largely, if not exclusively, of persons who still believe or want to believe in magic. Whenever a person proposes a short cut or a quick cure, whether it be for headache, indigestion or psychologic conflict, he will always attract a considerable number of followers. This is one reason this book will probably have a large circulation. Another equally valid reason for anticipating this book's popularity lies in the fact that the author has employed a technic which rarely fails. The technic is simple and consists merely of an unqualified attack on a science or a scientific procedure about which he has little or no insight.

Many, if not most, men who have made great scientific discoveries have been exposed to such experience. Obvious examples of famous personalities who have been exposed to such unwarranted attacks may be recognized in the experiences of Copernicus, Darwin, Semmelweiss and Pasteur.

Now Salter turns his bazooka on Sigmund Freud. In the opening chapter of his book the author states, "It is high time that psychoanalysis, like the elephant of fable, dragged itself off to some distant jungle graveyard and died. Psychoanalysis has outlived its usefulness. Its methods are vague, its treatment is long drawn out, and more often than not, its results are insipid and unimpressive." Salter is probably right when he infers that elephants do not crawl off to a common place to die, at least no one has ever discovered such a graveyard. But he is certainly misled if he entertains the idea that psychoanalysis is dying or even weakening. On the contrary, the science and its use as a method of psychotherapy was never more active than it is today. To recognize this fact, he need only inform himself of the many universities that have in the recent past placed trained psychoanalysts on their teaching staffs, the large number of schools that are still seeking personnel with this training and the tremendous number of young doctors who are seeking psychoanalytic training.

Salter, like so many others, begins his book with a false thesis and continues from there to expound fallacies. It is not true that psychoanalysis has outlived its usefulness. The true scientific value of psychoanalysis is just beginning to be universally recognized. Its methods are not vague, its treatment is not necessarily long drawn out and its results are far from insipid or unimpressive.

The studies of Pavlov, on which the present work is largely based, are well known to all recognized psychoanalysts, and it appears significant that the published studies of Dr. Thomas French, an internationally recognized psychotherapist, relative to Pavlov's excellent experiments have been completely ignored. Equally significant is the fact that the title and text of this book relate to therapy. Therapy is defined by Webster as a word derived from therapeutic, which in turn is defined as serving or treating medically. Salter does not possess a degree in medicine, and it appears rather presumptuous of him to attempt to advise a group of men and women who have devoted many years of their lives and many hours of study to qualify themselves for this profession.

Centennial Volume Bucks County Medical Society of Pennsylvania 1848-1949. By Clyde R. Flory, M.D., Sellersville, Pa. Cloth. Pp. 255, with illustrations. Bucks County Medical Society, C. R. Flory, M.D., 27 Temple Ave., Sellersville, Pa., 1949.

The centennial volume of the Bucks County Medical Society is a chronicle rich in anecdotes of medical folklore and service to the community. Bucks County is one of the garden spots in the Keystone state. Life in the Pennsylvania Dutch country has a flavor all its own. A high sense of duty is revealed in the brief biographic sketches of members of this county medical society. Prominent physicians from other areas of the commonwealth contributed many of the best statements included in this volume. The testimonials from the deans of the various medical schools of the state reveal their high regard for the accomplishments of the Bucks County profession.

Following the first section of biographic sketches in the volume there is found a description of the various hospitals in the county. With each of these, there is a comment by the superintendent and notes concerning the staffs and other items of interest. A feature of this attractive volume is a detailed sketch of the first president, Phineas Jenks, M.D.

In times of national emergency, including the Civil War and World Wars I and II, a large number of Bucks County physicians joined the colors and several died.

A description of the physicians' families and notes taken from various meetings are other features included in the centennial volume. Many notables of the medical profession who first saw light in Bucks County later distinguished themselves in distant places.

This is a readable volume which sparkles with newsy morsels from a choice section of Pennsylvania.

Early Carcinoma of the Uterine Cervix: Pathogenesis and Detection. By Hansjakob Wespi, M.D., Chief of the Obstetrical and Gynecological Department, Frauenfeld Hospital, Aarau, Switzerland. Translation by Marie Schiller, Ph.D. Foreword and Survey by Walter Schiller, M.D., Pathologist of the Women and Childrens' Hospital, Chicago. Revised edition. Cloth. $6.50. Pp. 271, with 95 illustrations. Grune & Stratton, Inc., 381 4th Ave., New York 16, 1949.

Those who are familiar with the original German edition of this book, published in 1946, will be glad to see this English translation, which, incidentally, was done satisfactorily by Marie Schiller (Mrs. Walter Schiller). At the outset it may be said that the material in Wespi's work is based largely on his colposcopic studies, for he is an ardent disciple of Hinselmann in the employment of this diagnostic method. Colposcopy enjoyed an extensive vogue in European clinics before the war but has been recently less popular. In our own country it has not been accepted.

This fact should not detract from the interest or importance of Wespi's studies on the early and precursory phases of cervical cancer. Wespi combines colposcopy with the use of the Schiller tinctorial test, which likewise appears to be less and less used in our own clinics. Those who have used colposcopy will testify that it is a time-consuming procedure and will probably agree that it yields no more screening information than

can be obtained by simpler methods, such as ordinary biopsy, various forms of so-called surface biopsy and vaginal cytology.

The Foreword and Survey by Walter Schiller comprises 30 pages, divided into four short chapters on General Considerations, Detection, Corroboration and Terminology. In these is included a short and rather unenthusiastic discussion of vaginal smears. Wespi's own work is presented in three sections. The first includes a history and discussion of colposcopy and a description of the various stages of epithelial atypia and leukoplakia according to the general plan set forth in the numerous publications of Hinselmann. Three pages are devoted to the Papanicolaou smear method, which the author says he could not adopt until November 1947, so that this short section is perfunctory.

The last two sections seem to contain the real meat of the book, since they present an excellent discussion of the pathology of preinvasive and early invasive lesions, as well as of the more moderate degrees of epithelial atypicalness and overactivity which are being so intensively studied in many of our own clinics. This discussion will be of special interest to gynecologic pathologists, all of whom are so frequently faced with these difficult problems of pathologic interpretation.

There are 95 illustrations, chiefly photomicrographic, most of them excellent, but some leaving something to be desired. They are not placed in the text, but at the back of the book, so that one is apt to be kept busy turning pages back and forth. It seems unfortunate that there is no discussion of the interesting epithelial overactivity and atypicalness found not infrequently in the cervix of pregnancy, not only because of its practical diagnostic importance, but because such changes often appear reversible, as has been shown with similar changes in at least some instances in nonpregnant women. An excellent bibliography, including 235 references, is appended to the volume. This little book merits the attention of all gynecologists and pathologists who have to deal with this still rather confused and comparatively new field of cervical pathology.

For the New Mother. By Mildred V. Hardcastle, R.N. Cloth. $2. Pp. 163, with illustrations by Shirley Tatterfield. The John C. Winston Company, 1006-1016 Arch St., Philadelphia 7, 1948.

Deliberately limited to care during the first year of infancy, this book maintains a ligh-hearted approach that should be of considerable assistance not only to new mothers but also to physicians. It offers a wealth of practical advice, yet avoids specific recommendations of a treatment nature. Palliative procedures that may be employed pending arrival of the doctor are sound, and most are recommended obviously with the doctor in mind and as a means of making his visit most satisfactory and productive. An illustrative example is the chapter on formula preparation, which opens with advice against formula feeding unless it has been recommended by the physician. The chapter is limited to the mechanics of this routine.

One chapter is devoted to the first three months, one to the fourth and fifth months, one each to the months from sixth to ninth, inclusive, to the tenth and eleventh months and, finally, to one year. Others in the 13 chapter book deal with emergencies, the baby's bath and the mental adjustment of the mother to her new role. At the start and end of each chapter are appropriate illustrations that emphasize the cheerfulness and encouragement typical of the volume.

Twilight in India. By Gervee Baronte. Cloth. $3.75. Pp. 382, with 11 illustrations. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1949.

This is an unswerving attack on Hinduism which also serves as an attack on India because of the influence of Hinduism on this country. The author appears to have little regard, perhaps even little hope, for India. The information is revealing and certainly indicts the mystical and superstitious practices of those who are more concerned with ideology than public welfare. The book is interesting to physicians because some insight is gained into part of the reason for the health problems that exist in India. Mysticism, spiritualism and ignorance are unmercifully attacked by the author, who feels that progress can be obtained only when a country rids itself of these deterrent factors.

Modern Discoveries in Medical Psychology. By Clifford Allen, M.D., M.R.C.P., D.P.M., Physician in Charge of the Psychiatric Department of the Seamen's Hospital, Greenwich, England. Second edition. Cloth. $3.50. Pp. 236. The Macmillan Company, 60 5th Ave., New York 11; 10 St. Martin's St., Leicester Sq., London, W.C. 2, 1949.

This is the second edition of Dr. Allen's excellent book. The first edition was published in 1937 and, as the jacket states, has been translated in many languages, including Italian and Bengali. Dr. Allen in simple, understandable language discusses the development of present day psychology from Janet through Mesmer and Morton Prince to Freud, Adler and Jung. There are also chapters devoted to Pavlov's conditioned reflex experiments as well as the contributions of Wagner-Jauregg and Kretschmer. There is a good bibliography, although, as has been done by many English authors, the contributions of American writers have been largely, although not entirely, ignored. This is only a minor criticism; the book is highly recommended to all students who are interested in the problems of human behavior.

Conflict in Marriage: The Unhappy Undivorced. By Edmund Bergler, M.D. Cloth. $2.75. Pp. 216. Harper & Brothers, 49 E. 33rd St., New York 16, 1949.

For many an unhappily married couple, this small volume may well serve as the starting point for adequate readjustment. Certainly the basic factors in maladjustment are presented simply and clearly, and in all probability the case reports illustrating particular situations will be recognized by many a husband and wife. Frankness of the approach on this impersonal level permits a psychiatric investigation of self by the reader with a minimum of painful experience and does a job for which many physicians may have too little time or inclination.

Written in four parts, the book considers the three "complaints" presented most frequently, "mental cruelty," "marital captivity" and "the inexpressible reproach." At the close of each of these sections is a helpful chapter on precautions and remedies.

The fourth section deals with the general subject of marriage, to which the author refers as a "workable institution." He concludes that it is not seriously threatened, one point in that conclusion being the fact that no substitute for it has ever been developed.

The physician will find this volume of considerable value to those who may come to him for premarital counsel, in addition to those marriage partners who have consulted him because of conflicts that are finding expression in physical as well as mental disorders.

Greves & Brickdale's Text-Book for Nurses: Anatomy, Physiology, Surgery and Medicine. Seventh edition, revised by J. A. Nixon, C.M.G., M.D., F.R.C.P., Consulting Physician to Bristol Royal Hospital, Bristol, and Sir Cecil Wakeley, K.B.E., C.B., D.Sc., Fellow of King's College, London. Cloth. $9.25. Pp. 698, with 249 illustrations. Oxford University Press, 114 5th Ave., New York 11; Amen House, Warwick Sq., London, E.C. 4, 1948.

The book is intended as a comprehensive textbook to supplement the lectures given to student nurses by members of the medical and surgical staff. Its primary purpose is to enable the nurse to understand the principles underlying medical and surgical treatment. The technical details of nursing arts are not discussed.

When this book was written, in 1912, one volume could probably cover in adequate detail the range of subjects in the student nurse's curriculum. However, the changed complexion of nursing education, with its increased emphasis on academic instruction preliminary to and integrated with clinical experience, has created a need for more highly specialized information in each field. It would be an onerous task to assemble such information into one textbook, and it would be difficult for one author to become sufficiently well informed on so many diverse subjects.

There are many discrepancies between the author's discussions and what are believed in this country to be the best approaches to the problems in medicine and surgery today. It also is unlikely that the author's statements represent the current consensus in Great Britain. Many of the apparently obsolete practices described by him are probably due to inadequate revisions of the text during recent years. This appears to be

supported by the fact that many of these practices now found to be objectionable were formerly regarded as acceptable. For example, the author states that carbolic acid is still used extensively; that trinitrophenol (picric acid), bismuth, iodoform and paraffin paste, Dakin's solution and acriflavine are effective general antiseptics, and that the intravenous injection of merbromin (mercurochrome®) in a 10 per cent solution is used in the treatment of septicemia. The combating of shock by the administration of hot sodium chloride solution rectally and the bandaging of the legs "to squeeze the blood into the body" enjoyed limited clinical use many years ago. These examples are characteristic of the general tenor of the entire book.

With the exception of the chapter on anatomy, which is principally devoted to illustrations, this book is not recommended for student use.

Modern Surgical Technic. By Max Thorek, M.D., LL.D., Sc.D., Professor of Surgery, Cook County Graduate School of Medicine, Chicago. Contributors: Harry Barowsky, M.D., Assistant Professor, Department of Medicine, Section of Gastro-Enterology, New York Medical College, Flower and Fifth Avenue Hospitals, New York, and others. With a Foreword by Fred W. Rankin, B.A., M.A., M.D., Surgeon, St. Joseph's and Good Samaritan Hospitals, Lexington, Ky. Volume I: General Operative Considerations, Surgery of Head and Neck, Principles of Plastic Surgery. Volume II: Surgery of Nervous and Vascular Systems, Surgery of the Chest, Surgery of Bones and Joints. Volume III: Surgery of the Breast, Surgery of the Abdomen. Volume IV: Hernias, Gynecology and Genito-Urinary Surgery. Index. Second edition. Cloth. $72. Pp. 711; 713-1567; 1569-2472; 2473-3170, with 2590 illustrations; 85. J. B. Lippincott Co., 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C. 2; 2083 Guy St., Montreal, 1949.

The first edition of this work was published in 1938. It has been printed eleven times since then; a special volume was prepared for our Armed Forces. A Spanish translation of the work appeared in 1941 and a Portugese translation in 1944. The book covers the entire field of operative surgery. It is intended particularly for students, for general surgeons and for practitioners who are occasionally called on to perform emergency operations.

The work presents three distinctive features: 1. It is largely the work of one man, with all the advantages and disadvantages that single authorship entails. 2. Operative procedures are described by the step by step method. 3. Profuse and mostly excellent illustrations elucidate the text. The advantages of single authorship are reflected in uniformity of approach as well as in an attitude of one who is somewhat of a student of the history of surgery, so that most of the important surgical procedures are treated from a historical viewpoint. The disadvantages, definitely less important, are those associated with personal bias and personal preferences; for example, author's attitude toward the McBurney incision for appendectomy.

The book, while fairly inclusive, does not suffer from being too voluminous, nor is it too abridged. The paper and the type used are of the best quality. It should prove to be a convenient and authoritative reference work for the student, the general surgeon and the general practitioner.

Fractures. By Paul B. Magnuson, M.D., F.A.C.S., Professor of Bone and Joint Surgery and Chairman of the Department, Northwestern University Medical School, Chicago, and James K. Stack, A.B., M.D., F.A.C.S., Assistant Professor of Bone and Joint Surgery, Northwestern University Medical School. Fifth edition. Cloth. $7. Pp. 537, with 325 illustrations. J. B. Lippincott Company, 227-231 S. 6th St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C. 2; 2083 Guy St., Montreal, 1949.

This new edition has brought together much of the material that is available on the modern treatment of fractures. The book is well written and readable. The paper, printing and illustrations are excellent. Particular attention is drawn to the clarity of the drawings, which are partly diagrammatic but sufficiently delineated to give a clear conception of the anatomy and the subject matter.

The treatment of fractures cannot be learned from books. They can only provide a guide. A book which presents all methods of treatment becomes confusing and does not aid the surgical judgement of the reader. The book on fractures by Drs. Magnuson and Stack clearly reveals that it is the result of long and large clinical experience, and it is a great advantage in the management of fractures to have this book available.

It is self evident from the contents that the writers feel the book should be presented to members of the medical profession, especially those in the small cities, who are constantly confronted with fractures from automobile accidents and farm and industrial accidents, and to those who have not had the opportunity of extensive experience with fractures.

The chapter on compound fractures cannot be surpassed. There is much valuable information which reveals the long personal experience of the writer in the treatment of fractures of the shoulder, forearm, the shaft of the femur, the leg and elsewhere.

A valuable chapter in this book is the one written by Dr. Loyal Davis on fracture dislocation of the spinal column. His description of the anatomy of the cord and the treatment of lesions of the cord is written in excellent English and is concise and easily understood.

The chapter by Dr. Loyal Davis on fractures of the skull also is a masterpiece, and although many who treat fractures now are able to consult neurosurgeons, chapters of this kind should be in every treatise on fractures.

The last chapter, by Dr. John S. Coulter, is well written and comprehensive and stimulates the reader to additional investigation of physical medicine as applied to the treatment of fractures.

Principles of Human Physiology. Originally written by Prof. E. H. Starling, M.D., F.R.C.P., C.M.G. Tenth edition by C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S., Jodrell Professor of Physiology in University College, London. The Chapters on the Special Senses by H. Hartridge, M.A., M.D., Sc.D., Director of Vision Research Unit (Medical Research Council), Institute of Ophthalmology, London. Cloth. $10. Pp. 1193, with 693 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6; J. & A. Churchill, Ltd., 104 Gloucester Place, Portman Sq., London, W. 1, 1949.

This book has long been known to teachers and medical students, especially those in British countries. For years it has been a standard and useful reference, although more recently it has been prepared by C. Lovatt Evans, and the name Starling probably is unfamiliar to many of the younger students.

With typical British brevity the table of contents is condensed into two and a half pages, but this is not an indication of the amount of useful information that can be found. The text is divided into eight "books," the first book, or a section, being devoted to general principles, the second to tissues and movement (muscle and nerve), the third to centralized control and coordination (the central nervous system), the fourth to the supplying of information (the special senses), the fifth to systems for distribution of materials (blood, circulation and respiration), the sixth to intake of materials (nutrition and metabolism), the seventh to removal of waste and temperature conservation (excretion and temperature regulation) and the eighth to provision of special chemical stimulants and to measures for continuance of the species (the endocrine organs and reproduction). Fifty-four chapters have been written to present these topics.

Like the earlier editions, this book presents a wealth of material that will be useful to any who wish to search for it. Condensed type is used, which makes reading difficult. This is complicated still further by the frequent use of small point type, and some may find this style of printing rather irritating.

Stedman's Medical Dictionary of Words Used in Medicine with Their Derivations and Pronunciation Including Dental, Veterinary, Chemical, Bontanical, Electrical, Life Insurance and Other Special Terms; Anatomical Tables of Titles in General Use, the Terms Sanctioned by the Basle Anatomical Convention; the New British Anatomical Nomenclature; Pharmaceutical Preparations Official in the U. S. and British Pharmacopoeias or Contained in the National Formulary; and Comprehensive Lists of Synonyms; Biographical Sketches of the Principal Figures in the History of Medicine. Edited by Norman Burke Taylor, M.D., F.R.S.C., F.R.C.S., in collaboration with Allen Ellsworth Taylor, D.S.O., M.A. Seventeenth edition with etymologic and orthographic rules. Cloth. $8; with thumb index, $8.50. Pp. 1361, with illustrations. The Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1949.

A medical dictionary is an important tool to everyone concerned with medicine. It is an indispensable book for practitioners. Because medical progress is being made by leaps and bounds, it is necessary to revise dictionaries at frequent intervals. This new edition truly deserves the popularity that the dictionary has had over the years. Outdated material has been deleted; older definitions have been revised and brought up to date, and new words have been added.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PARA AND GRAVIDA

To the Editor:—**What is the exact definition of "para." A difference of opinion occurs in the inclusion or exclusion of: living or dead children; term of gestation; cesarean sections; multiple pregnancies as one or two para, and stillbirths. There is also some confusion concerning the difference between gravida and para.**

M.D., Missouri.

ANSWER.—Gravida refers to a pregnant woman; the word is used to denote a pregnancy regardless of its duration. Multigravida refers to the number of times a woman has been pregnant, not to the number of fetuses.

Para refers to the delivery of pregnancies that have continued to the period of viability. A patient is a primipara when she delivers a fetus which has been viable, regardless of whether the child is dead or alive at birth. If a woman has delivered five children, even if two are twins, she is a quintipara. "Delivered by cesarean section" is a commonly accepted term; a mother of four children, even if one was delivered by cesarean section, is a quadripara.

TESTS FOR ALCOHOLIC INTOXICATION

To the Editor:—**What kind of apparatus is preferred for designating the amount of alcohol present in body fluids, i. e., best for sobriety tests in a police department. I need to know where the apparatus may be purchased, the price of the apparatus and the cost of each test. At what average concentration does a person become detectably intoxicated? Can you supply a copy of the Purves-Stewart figures?**

M.D., California.

ANSWER.—Various methods are used to determine the amount of alcohol in body fluids. All the methods are based on the fact that alcohol in the body becomes equally distributed in the fluids of the body and that alcohol in the breath can be used to predict alcohol content of the blood. The determination of alcohol in the blood would be preferred were it not for the difficulty of obtaining specimens, a procedure which would demand the services of a physician. The breath test has the advantage of simplicity and on-the-spot determination which is reasonably accurate. Blood and urine tests require no special apparatus other than that found in most chemical laboratories. The A. S. Aloe Co., St. Louis, sells the Friedemann Distillation Apparatus for Alcohol, no. 12030, it is reported, for $10. Friedemann's test requires about 45 minutes for one or several tests. The cost per test is negligible. The method is described in the *Journal of Biological Chemistry* (123: 161, 1938).

The LaMotte Outfit for Determining the Concentration of Alcohol in Blood and Urine consists of a complete distilling outfit, including color standards. The outfit sells, it is said, for $64.40. Individual tests can be completed in 15 minutes for a few cents each. It is based on the method described by Heise in the *American Journal of Clinical Pathology* (4: 182, 1934).

The Drunkometer, an apparatus for determining the amount of alcohol in the breath, was devised by Harger. The Drunkometer may be purchased from the Stephenson Corporation, Red Bank, N. J., it is said, for $225. Individual tests are inexpensive. This is the best known for breath tests, and tests can be performed by properly trained police officers.

The Alcometer, a breath-testing apparatus recently developed by the Department of Applied Physiology of Yale University, is sold by Alfred Bicknell Associates, Cambridge, Mass., it is said, for $775. Tests are automatically completed in eight minutes at a cost of 25 cents.

The Michigan State Police are using the Forrester Intoximeter, which is based on a breath test reported by Jetter and Forrester in the *Archives of Pathology* (32: 828 [Nov.] 1941). The Intoximeter is a portable breath-testing cylinder 2⅝ inches (7 cm.) in diameter and 9 inches (23 cm.) long and is manufactured by the Intoximeter Assoc., Niagara Falls, N. Y. Each unit costs about $4 and has salvage value, so that individual tests cost about $2.50. The test consists of two parts. First a presumptive test is made, which takes about five minutes. If this test indicates less than 0.05 per cent alcohol, no further testing is done. If the test indicates more than 0.05 per cent, a specimen of breath is taken for a subsequent accurate laboratory analysis.

It has been recommended by the National Safety Council Committee on Tests for Intoxication and the American Medical Association Committee to Study Problems of Motor Vehicle Accidents that the effects of alcohol in the blood in concentrations below 0.05 per cent are insufficient for a diagnosis of "under the influence of alcohol." Concentrations between 0.05 per cent and 0.15 per cent are usually associated with a loss of some of the clearness of intellect and self control that a person would ordinarily possess. However, quantities of alcohol over 0.15 per cent constitute prima facie evidence of "under the influence." The Purves-Stewart article appears in the *Edinburgh Medical Journal* (44: 633, 1937) and contains the following table:

500 to 400 mg. per 100 cu. cm. (decilitre) of blood	(.50% to .40%)	Coma ("dead drunk"), sometimes fatal
350 mg.	(.35%)	Stupor; inability to stand or walk.
200 mg.	(.20%)	All cases (i. e. 100 per cent) show marked inebriation with psychic and speech disorders; also motor symptoms (cerebello-ponto-bulbar).
180 mg.	(.18%)	80 per cent of cases show clinical signs of moderate intoxication, including diminution of control, mental confusion and disorders of co-ordination.
160 mg.	(.16%)	66 per cent show similar clinical signs.
130 mg.	(.13%)	50 per cent show similar clinical signs.
100 mg.	(.10%)	33 per cent show slighter pathological symptoms; talkativeness, euphoria and abnormal confidence.
80, and downward to 30, 20 and 10 mg.	(0.08, 0.02, 0.01%)	Show no gross clinical abnormality of behavior.
80 and downward, to 30, 20 and 10 mg.		But toward the higher figures careful testing reveals delayed reaction time (0.4 second instead of 0.1 second) followed by hasty acceleration when driving a car, together with diminution of judgment, attention and control; also loss of efficiency in finer performance tests. The individual is more genial and has fewer inhibitions (*in vino veritas*).
0 mg.		As in the normal abstainer, but also in many cases of delirium tremens.

Although a single test is usually sufficient as evidence, it is strongly urged that at least two types of tests be performed. It is recommended that law enforcement agencies use the breath test and, if preliminary testing warrants, that blood or urine be collected for confirmation analysis.

CLEFT PALATE IN SIBLINGS

To the Editor:—**I have a patient who with her first and only pregnancy had a normal antepartum course and delivery. The infant, a girl, had moderate cleft lip not involving the palate but only the upper gum on one side. The repair is being handled by a competent surgeon, and the child is making normal development in other respects. The mother would like to have more children but fears other malformations. There is no history of any near relative with similar defects. What are the chances that subsequent children will have similar or other malformations?**

Robert L. Rice, M.D., Richmond, Ky.

ANSWER.—Harelip and cleft palate may afflict brothers and sisters in more than one generation. They may occur in association with more serious defects, and in such cases may be an index of a highly defective inheritance.

The genetic basis of harelip and cleft palate is complicated and far from being settled, according to Gates (Human Genetics, New York, The Macmillan Company, 1946, vols. 1 and 2).

What the chance will be, in a given family, that a sibling of a child with harelip and cleft palate will exhibit either of these defects cannot be stated. However, available statistics dealing with the frequency of various types of malformations indicate that the siblings of a person possessing any congenital defect are unusually likely to have some defect. If a second child in a family is born with a defect, it is likely that it will be the same defect as that which appeared in the older brother or sister (Murphy, D. P.: Congenital Malformations: A Study of Parental Characteristics with Special Reference to the Reproductive Process, ed. 2, Philadelphia, J. B. Lippincott Company, 1947).

In the case of the family mentioned, the chance that a subsequent child would have harelip and cleft palate would be increased if it were a male, since the condition is more frequent in that sex.

PAIN OVER THE COCCYX

To the Editor:—A woman aged 40 had an uncomplicated hysterectomy six months ago because of fibroids with hemorrhage. Since then she has complained of an area of pain, progressive in severity, over the coccyx, the size of a silver dollar and nonradiating. I have tried all measures known to me, including multiple deep procaine injections into the area, with slight or temporary relief to the patient. Her pain is still made worse by sitting down or raking the lawn. Physical examination, neurologic and roentgenographic examination of this area reveal essentially normal conditions. Please suggest possible causes and any further courses to be pursued in treatment.

A. E. Powell, M.D., Madison, Va.

ANSWER.—The pain in the coccyx may not necessarily be related to the hysterectomy but may be due to injury or arthritic changes coincident with or subsequent to the operation. If the pain is in the coccyx, movement of the coccyx with one finger in the rectum and another against the coccyx outside will definitely give rise to the pain. If this is the cause, then removal of the coccyx may be indicated. If the pain is referred and not reproduced by movement of the coccyx one must look for other pelvic lesions. If there is considerable prolapse of the cervix or vagina, depending on what type of hysterectomy was performed, a tenaculum on the cervix will reproduce the pain with traction, especially when the patient is standing up. Fastening the uterine supports too snugly will frequently give rise to pain, and this type of pain can usually be reproduced on vaginal or rectovaginal examination by putting traction on these ligaments. Endometriosis and other types of adhesions occasionally give rise to pain in the pelvis, as do various pathologic conditions of the rectum and lower part of the intestine.

Other factors must be considered also, namely, the patient's weight, especially gains in weight, and occupation or added occupations.

ANGIONEUROTIC EDEMA

To the Editor:—A patient has had recurrent attacks of angioneurotic edema, for eight years, after ingestion of foods containing vitamin C in appreciable quantity. He has not had relief from treatment with antihistaminics. Could he be desensitized?

M.D., Ohio.

ANSWER.—If one assumes that the patient's attacks of angioneurotic edema actually arise because of a sensitivity to a food, it would be necessary to establish which foods are responsible. The assertion that the attacks arise after ingestion of foods containing vitamin C in appreciable quantities is far too vague to permit therapeutic suggestions. If it is implied that vitamin C per se gives rise to the angioneurotic edema, this is unlikely. Natural foods which contain vitamin C in large quantities include a heterogeneous, unrelated group of foods either from the botanical or immunologic points of view. It would be necessary to determine by trial diets which of these foods was actually responsible. Skin tests are not likely to be of value. If the specific food had been determined, it should be possible to hyposensitize the patient by injection of an extract of the food or by the oral feeding of minute quantities, or by a combination of the two methods. It is not possible to give a quantitative technic for this as it is largely an empiric procedure.

REPAIR OF FEMORAL HERNIA

To the Editor:—Textbooks state that when there is a femoral hernia in the woman there is often tension needed to attach the Poupart ligament in a lateral direction to the tissue. Many papers have been published about some material with which the opening can be covered, so that relapse in such cases of tension is less probable. Which method is most favorably recognized by authorities?

M.D., Tennessee.

ANSWER.—That tension may exist in attempting to approximate the inguinal ligament to the iliopectineal (Cooper's) ligament or to the pectineal fascia in the repair of a femoral hernia is recognized, and it should be avoided. This is particularly true when the femoral ring is dilated owing to the usual unyielding character of the inguinal ligament. Most authorities agree that closure of the ring can be accomplished most satisfactorily via the inguinal route and that in these circumstances silk or a living fascial suture should be utilized. Various modifications of technic have staunch advocates, but one of the cardinal principles of surgical procedure, the avoidance of suturing tissue under tension, must be respected if recurrence is to be avoided in the greatest number of patients. Operation via the femoral route (through the saphenous opening) is said to be associated with a recurrence rate of 5 to 10 per cent. Operation via the inguinal route with painstaking care in following the precepts laid down by authorities in the field should produce results that show no more than 2 to 3 per cent recurrences.

REPAIR OF INGUINAL HERNIA

To the Editor:—Kindly describe how to obtain flaps of fascia (pedicle left attached) from the nearby abdominal muscles to strengthen the floor in inguinal hernia operations. What fascia has been used as flaps? To what are these various flaps sutured?

M.D., Minnesota.

ANSWER.—A good hernioplastic reconstructive procedure employing the locally available tissues, granted they are sound, constitutes a satisfactory operation for hernia. If there were no spermatic cord to consider in the repair of an inguinal hernia, the external and internal hernial orifices could both be closed, leaving little or no opportunity for recurrence of the hernia. The weakness of the Bassini operation is that it leaves the patient with two abdominal rings as potential hernia orifices. The Halsted I operation leaves the patient only with an internal abdominal ring.

In the repair of inguinal hernia, the following additional procedures are available:

A. Pedicled flap. (1) Use of an attached ribbon of the external oblique aponeurosis for suture (McArthur). (2) The lower end of the rectus fascia (and muscle) swung down and sutured to Poupart's ligament (Halsted). (3) Suture of the conjoined tendon to Cooper's fascia (Lotheissen [femoral], McVay [inguinal]). (4) Upper end of sartorius used to replace a weak Poupart's ligament (Bloodgood). (5) The iliotibial tract of fascia lata pedicled on the tensor fascia femoris muscle swung up into the groin (Wangensteen).

B. Free autogenous fascial grafts. (1) Sheets of fascia lata (Kirschner). (2) Strips of fascia lata used as suture material (Gallie).

C. Free autogenous dermal grafts.

D. Preserved ox fascia grafts (Koontz).

E. Wire mesh incorporated in the hernial repair (steel, tantalum, vitallium).

Fascial flaps, whether pedicled or free, are sutured to the adjacent tissues to lend strength and substance and are incorporated in that layer of the closure where additional support would be most helpful.

ANEURYSM OF AORTA

To the Editor:—I recently had a patient with dissecting aneurysm of the ascending aorta, with fatal rupture into the pericardium a few hours after the onset of severe symptoms. About ten days prior to death the patient, while at work, sustained a severe fall on the ice, striking his right shoulder and chest. How much did his trauma have to do with the dissecting aneurysm? I would like references to any literature on the subject.

M.D., Ohio.

ANSWER.—The only plausible mechanism by which a fall on the ice such as that described could contribute to the development of a dissecting aortic aneurysm would be by causing a sudden rise in blood pressure. Certainly the exertion, pain and excitement incident to a severe fall constitute an adequate stimulus for a sharp vasopressor reaction (W. B. Cannon: Bodily Changes in Pain, Hunger, Fear and Rage, ed. 2, New York, D. Appleton & Company, 1929). It is reasonable to believe that a sudden increase in blood pressure from any cause may precipitate the formation of a dissecting aneurysm at a site of already existing medial disease (A. R. Moritz: Pathology of Trauma, Philadelphia, Lea & Febiger, 1942, p. 123). In the case in question the interval between the fall and the onset of symptoms of dissection is too long to be compatible with a cause and effect relationship. If a dissecting aneurysm is to be attributed to a pressor episode, the symptoms of dissection must develop almost immediately. The longer the interval the less is the likelihood of a causal relationship.

FRAGILE BONES

To the Editor:—The father of a 2 month old infant had fragile bones with numerous fractures, blue scleras and otosclerosis. The infant appears to have some of its father's characteristics. Is there any specific therapy for this condition, particularly as to prevention of fractures and the ear condition?

M.D., New Jersey.

ANSWER.—There is no specific treatment for patients with fragile bones. The condition in some of these cases is definitely classed as osteogenesis imperfecta. Other names for the same condition are brittle bones and blue scleras. As patients become older they usually improve. However, there is no specific treatment for preventing fractures and improving the hearing.

FAT ATROPHY FOLLOWING INSULIN INJECTIONS

To the Editor:—A child 3 years of age has had diabetes mellitus for eighteen months, and atrophy of the subcutaneous fat has developed at the sites of insulin injection. This occurred when globin insulin and regular unmodified insulin were used. The parent's technic for giving the injections is satisfactory. What is the cause of the atrophy, and what can be done to prevent it? J. M. Woodall, M.D., Big Spring, Texas.

ANSWER.—The cause of atrophy of subcutaneous fat at the site of insulin injections is not known. The condition is common in children of both sexes, but it occurs infrequently in adult men. The disappearance of fat probably is due to a local metabolic action of insulin, although the exact mechanism is not clear. The importance is solely cosmetic, since important tissues, such as muscle and nerve, are not affected. The atrophies are not due to the type of insulin used or to the p_H of the preparation. The process is not inflammatory in character; all that can be seen histologically is disappearance of fat.

The parents should change the site of injection from day to day; as wide an area as possible should be used for the injections, and the insulin should be injected deeply beneath the skin and not superficially. Insulin of U 80 potency and with prolonged action is preferable, to reduce the number and volume of injections. The injections in girls and women, and those susceptible to fat atrophy, should be confined to the abdomen and flanks, so that if atrophies occur they will not be exposed. In some instances the subcutaneous fat may gradually return if the areas are not subjected to further treatment.

HOGBEN TEST FOR PREGNANCY

To the Editor:—How accurate is the Hogben test for pregnancy? Has the validity of this test any legal standing? M.D., Tennessee.

ANSWER.—In a carefully controlled series of 100 consecutive routine pregnancy tests using the Xenopus laevis, S. L. Robbins, F. Parker Jr. and W. C. Boyle (*New England J. Med.* **234**: 784 [June 13] 1936) reported that no false positive results were encountered. Four patients with low titer urine gave false negative reactions, but it is believed that with slight changes in the original technic, this type of error can be eliminated. E. C. Foote and G. E. Seegar Jones (*Am. J. Obst. & Gynec.* **51**: 672 [May] 1946) reported that the Hogben test is 96 per cent accurate and elicits no false positive reactions. H. von Watenwyl (*Gynaecologia* **121**: 29 [Jan.-Feb.] 1946) reported that the results of the Hogben test were 100 per cent correct in 84 tested and subsequently proved pregnancies. Results were positive as early as one or two weeks after the first missed period. The accuracy of the Aschheim-Zondek test is not more than 95 per cent. When the Hogben test is repeated in two or more laboratories and the result is the same in both, it should be acceptable in court. However, as far as is known, this test has not been used in any legal proceeding.

IMMUNITY TO POLIOMYELITIS

To the Editor:—Do children of mothers who had poliomyelitis in childhood and completely recovered have any immunity to this disease? A. Grossman, M.D., New York.

ANSWER.—It has been found that when neutralizing antibodies to the virus of poliomyelitis are contained in the serum of mothers, the same quantity is also contained in the serum of her children at birth. However, it would appear that this antibody is transient and that it disappears when the child is between 6 months and 2 years of age.

Poliomyelitis has occasionally been reported among children of mothers who have had the disease in infancy. Statistical comparison of the susceptibility of this group to that of the general population cannot be made from the data available. Articles by the following authors detail this knowledge:

L. Aycock and S. D. Kramer (*J. Exper. Med.* **52**: 457, 1930); C. F. Pait, J. F. Kessel and P. Grossman (*Am. J. Hyg.* **47**: 335, 1948) and T. B. Young, L. E. Young and E. S. Maxwell (*ibid.* **42**: 119, 1945).

PROSTATIC MASSAGE

To the Editor:—Can vigorous massage of the prostate cause infection? M.D., Connecticut.

ANSWER.—Vigorous massage of an uninfected prostate gland may result in infection of the gland. This is due to trauma. Without instrumentation, however, it is not likely to occur. If there is already a low grade infection vigorous massage may cause subacute prostatitis, acute parenchymatous prostatitis, prostatic abscess or epididymitis.

METASTATIC CARCINOMA

To the Editor:—A woman aged 46 had a scirrhous carcinoma of the breast with metastases in the axilla, which was removed three years ago. In May of this year roentgenograms showed metastases to the left parietal bone. At present the woman is receiving roentgen radiation therapy and testosterone propionate. Is there any form of treatment other than foregoing, or is there any place that will accept patients who are even willing to be used for experimental purposes? Radioactive gold treatment and serum treatment have been mentioned. What is the value of these latter treatments? If there is the least bit of value in these treatments, where are they available? David Diamondstone, M.D., Bayside, N. Y.

ANSWER.—Roentgen and hormonal therapy in combination appears to give the best palliative relief in persons suffering from carcinoma of the breast with metastases to the skeletal system. In some instances the regression is pronounced and the patient is relieved of symptoms for varying periods of time. Radioactive gold and other radioactive metals have not proved of benefit in such conditions. To date serum treatment has not received recognition. As to the inquiry regarding institutions that might accept such a patient for treatment, the state of New York has several excellent oncologic hospitals whose addresses could be obtained from the state health department.

CERVICAL SYMPATHETIC BLOCK

To the Editor:—Please describe the technic of stellate ganglion block for use in cerebral thrombosis. D. H. Anderson, M.D., Wewahitchka, Fla.

ANSWER.—Cervical sympathetic block used in properly selected cases of cerebral thrombosis and embolism is performed with the patient in bed, a pillow under the shoulders and the head turned to the side opposite from the site of injection. The transverse processes of the lower cervical vertebrae are palpated, and a skin wheal is placed over the sixth transverse process, which is palpable even in patients with thick, short necks. A 4 inch (10 cm.) 22 gage needle then is inserted through the wheal. When the needle comes in contact with the tip of the transverse process, it is slid along the anterosuperior surface of the transverse process until it reaches the body of the vertebra. Aspiration is made for air bubbles, blood or spinal fluid. If none of these is observed, 10 cc. of a 1 per cent solution of procaine hydrochloride is injected, aspirations being made repeatedly during the procedure. For details, contraindications and dangers, the article by Gilbert and de Takats in THE JOURNAL (**136**: 659 [March 6] 1948) may be consulted.

MULTIPLE VENOUS THROMBOSES

To the Editor:—A patient has blood clots in his veins throughout his body. He has had one severe pulmonary embolus. What is the diagnosis? Doster Buckner, M.D., Fort Wayne, Ind.

ANSWER.—The data submitted do not permit even a conjecture of what might be wrong with the patient; a complete physical examination and laboratory studies are a prerequisite. Conditions which are known to produce multiple venous thromboses throughout the body are numerous. Migrating phlebitis occurring in young male smokers always suggests Buerger's disease; a single venous thrombosis occurring after an operation, trauma or childbirth may show recurrences in the same area or elsewhere. A number of factors known to produce hypercoagulability of the blood, such as hemorrhage, dehydration, hemoconcentration, overdigitalization and carcinomatosis, also must be considered.

MUCOUS COLITIS

To the Editor:—A patient with chronic mucous colitis has four to six loose stools a day and passes some mucus with one of the stools. Bacteriologic examination of the stools has been negative. He improved on liquid succinylsulfathiazole (sulfasuxidine®) but a severe toxic dermatitis developed due to sensitization to the sulfonamide compound. I would appreciate knowing the latest treatment of this condition, particularly the value of oral antibiotics such as aureomycin or chloramphenicol, dosage and duration of treatment. Walter C. Woods, M.D., Valley Falls, Kan.

ANSWER.—If thorough gastrointestinal examination does not reveal evidence of organic disease, the treatment of mucous colitis is the same as the treatment of any functional bowel disorder. The diet should be bland, low in residue and nonlaxative. Small doses of an antispasmodic such as belladonna and a sedative such as phenobarbital given regularly may be helpful. Reassurance and relief of disturbing psychologic and social factors may give best results. Chemotherapy is not indicated.

CALISTHENICS AND REHABILITATION

To the Editor:—Kindly refer me to a textbook in which calisthenics are illustrated and described. I am interested in calesthenics that would be useful in general postoperative rehabilitation.

Elmer F. Gooel, M.D., Beverly Hills, Calif.

ANSWER.—"Directions for Exercise in the Home Under Supervision of the Physician," are distributed by the Council on Physical Medicine and Rehabilitation of the American Medical Association. The following pamphlets and books provide more detailed information on therapeutic exercises:

Handbook of Physical Medicine, Chicago, Ill., American Medical Association, 1945, pp. 108-114. (New edition now in process.)

Krusen, F. H.: Mechano Therapy Exercise, in Physical Medicine: The Employment of Physical Agents for Diagnosis and Therapy, Philadelphia, W. B. Saunders Company, 1941, chap. 14, pp. 550-626.

Manual of Physical Therapy, prepared by the Council on Physical Medicine and Rehabilitation, Subcommittee on Physical Therapy of the Committee on Information of the Division of Medical Sciences of the National Research Council, Chicago, Ill., American Medical Association, 1942.

BULBORESPIRATORY POLIOMYELITIS

To the Editor: Have any surgeons attempted to join the phrenic nerves to some form of electric excitation to get a rhythmic contraction of the diaphragm in the bulborespiratory form of poliomyelitis? There must be a method by which a slow delivery of electrical excitations may be obtained to get a rhythmic contraction of say 18 contractions per minute. I feel that this field has not been explored in the fight against the bulborespiratory form of poliomyelitis.

Robert Cohen, M.D., Bakersfield, Calif.

ANSWER.—It has been found possible to maintain adequate ventilation of the lungs, and to simulate fairly well the normal respiratory patterns of air movement, by recurring stimulation of the phrenic nerve. This has been done in animals and in human subjects, both with implanted and with surface electrodes. For the present status of this procedure, see a series of three papers on "Electrophrenic Respiration" by Stanley J. Sarnoff, Esther Hardenbergh and James L. Whittenberger (I, *Am. J. Physiol.* **155**: 1-9, 1948; II, *J. Clin. Investigation* **28**: 124-128, 1949, and III, *Am. J. Physiol.* **155**: 203-207, 1948).

STIMULATION OF SPERMATOGENESIS

To the Editor:—What therapy would be advisable to stimulate spermatogenesis in a physically normal man aged 42 with a basal metabolic rate of —8 per cent whose testicular biopsy showed maturation arrest at spermatid phase?

M.D., Ohio.

ANSWER.—Although a basal metabolic rate of —8 per cent is within normal limits, treatment with 1 grain (60 mg.) of thyroid might be of some advantage in this case. Weekly injections consisting of alternate chorionic gonadotropin and pituitary gonadotropic factor could be given intramuscularly. Sufficient rest, competitive exercise and avoidance of tobacco should be encouraged.

INJECTABLE VITAMIN MIXTURE

To the Editor:—What is the possibility of sciatic nerve damage from the administration of a 5 cc. vial of Vitamin B Complex (Upjohn's solu-b®) intramuscularly in the gluteal region.

M.D., Georgia.

ANSWER.—Solu-b® is an injectable vitamin mixture containing in each 10 cc. vial (as a dry powder) 10 mg. thiamine hydrochloride, 10 mg. riboflavin, 5 mg. pyridoxine hydrochloride, 50 mg. calcium pantothenate and 250 mg. nicotinamide. There is nothing in the mixture which is known to have a definite neurotoxic action. A solution of these substances would not be isotonic, however, and if it were injected accidentally close to a nerve, a chemical neuritis might be produced. In general, such a reaction should subside if actual mechanical damage has not been done to the nerve.

TREATMENT OF ARTHRITIS

To the Editor:—Several patients have inquired whether there is a so-called gelatin treatment for rheumatoid arthritis. Have you any information regarding this treatment?

H. S. Fuson, M.D., Eau Claire, Wis.

ANSWER.—Gelatin has been given orally to patients with rheumatoid arthritis for its nutritional value. A specific benefit from gelatin has not been demonstrated in this disease, nor does it serve better than other food sources which are complete in amino acids as a treatment for the malnutrition which often accompanies rheumatoid arthritis. Intravenous injection of gelatin is not recommended.

STERILIZATION OF SYRINGES

To the Editor:—Will adequate sterilization occur if a 2 cc. syringe, with plunger and needle connected, is placed in a cardboard container sealed with a metal screw cover and autoclaved for twenty minutes at 15 pounds and 250 F.?

Leonard Casser, M.D., Cresskill, N. J.

ANSWER.—It is unwise to sterilize an assembled syringe-needle combination, because access of the heat to all surfaces is not insured. For the same reason, a sealed container should not be used. Unassembled syringes and needles should be placed in cotton-plugged glass or metal tubes, provided with a cotton or gauze base, which will minimize breakage and dulling, and sterilized in the autoclave for twenty minutes at fifteen pounds pressure (250 F. at sea level) or in an oven at 250 F. for one hour. It is doubtful whether a cardboard container would withstand autoclaving.

ODORIFEROUS PERSPIRATION

To the Editor:—A young patient complains of odoriferous axillary perspiration. The commercial deodorant preparations are ineffective. What treatment is recommended? Is this condition influenced by diet; if so, which foods should be eliminated?

M.D., Minnesota.

ANSWER.—If the ordinary commercial deodorants fail to relieve odoriferous sweating, it might be well to sponge the axillas several times daily with an antiseptic solution, such as potassium permanganate 1:3,000, or bichloride of mercury 1:5,000. Talcum which contains 2 per cent salicylic acid and 5 per cent boric acid should then be applied. It is usually recommended, too, that the diet be free of stimulants, particularly condiments and alcohol, and the clothing changed frequently.

DIETHYLSTILBESTROL IN ENDOMETRIOSIS

To the Editor:—I read with interest the query and reply on Diethylstilbestrol in Endometriosis in *The Journal*, Aug. 27, 1949, page 1375. Diethylstilbestrol, in my opinion after prescribing it for about ten years, is a valuable adjunct for the treatment of endometriosis. Diethylstilbestrol has eliminated surgical treatment in about 75 per cent of cases of endometriosis in charity patients at Jefferson Davis Hospital and in my private practice. The reply stated that in many women nausea and vomiting prevents use of the larger dosage. I have now observed that 2 to 5 cc. of soluble vitamin B complex given intravenously thirty minutes to six hours before 6.25 mg. dosage of micronized diethylstilbestrol is started will eliminate nausea and vomiting. Or one may give 50 to 100 mg. of testosterone propionate intramuscularly four to eight hours before the 6.25 mg. of estrogen at 9 p. m. By the use of soluble vitamin B complex and/or androgen the nausea from diethylstilbestrol is practically eliminated. These antinausea preparations may be repeated any time they are needed every 4 to 7 days. I have found it best to give this drug in the following manner: Of a 25 mg. tablet, one-quarter is given every night at 9; every fourth night the dose is increased one-quarter tablet more until four tablets are given daily. Four tablets are given every fifteen minutes if bleeding or spotting occur. It may be necessary to keep the patient amenorrheic for two to six months. Whenever the patient experiences subsequent nausea and/or vomiting, 2 to 5 cc. of soluble vitamin B is given; this usually is effective in thirty minutes, and the effect lasts for seven days. The answer states that it is not known whether diethylstilbestrol will suppress endometriosis. I have shown by repeated culdoscopic examination and biopsy that by administration of large doses of diethylstilbestrol the endometrial glands and stroma but not the fibrous tissue will undergo atrophy. Cancer should be ruled out by all appropriate means before diethylstilbestrol therapy is initiated. The agent is not a panacea for endometriosis, but it causes temporary atrophy of the ovaries. If it is given before surgery the ovaries become small and "dried up," making the surgical procedure a great deal easier. I have not observed cancer of the breast or female organs after treatment with large doses of diethylstilbestrol in patients with or without endometriosis. Diethylstilbestrol therapy is advocated instead of roentgen and/or radium therapy in endometriosis for which the patient has had a laparotomy, because many patients have been relieved of endometriosis and still have normal function of their organs when they have been spared the removal of the organs or irradiation with roentgen ray or radium, which would destroy them also. Only micronized stilbestrol is advocated in these patients.

Karl John Karnaky, M.D., Houston, Texas.

ETIOLOGY OF URINARY CALCULI

To the Editor:—In reference to the Query and Minor Note on Etiology of Urinary Calculi in The Journal, Aug. 27, 1949, page 1375, one of the most probable answers was not mentioned. Schistosomiasis or bilharziasis is common among the West African natives. The so-called Schistosome haematobium causes the passage of blood and ova from these worms in the urine. Granulomas are sometimes produced as a result of these eggs causing irritation to the urinary passages. Therefore, I would advise examination of the urine and stool for the ova of S. haematobium or Schistosoma mansoni. From 1928 to 1935 I worked as a medical missionary in Nigeria, east of Accra on the west coast of Africa, except when I was studying tropical diseases in London during 1931 and 1932. I treated many patients with urinary calculi caused by Schistosomicsis.

J. C. Anders, M.D., San Diego, Calif.